

4.0 ENVIRONMENTAL SAMPLING RESULTS

4.1 Introduction

The Magna Metals RI/FS Site investigation was an extensive and comprehensive multimedia environmental sampling and analysis program which included the collection and analysis of septic tank/leach pit water and sludge samples, surface water and sediment samples, surface and subsurface soil samples, groundwater samples, and soil gas to determine the presence, nature and extent of contamination at the site. In addition, sub slab vapor and indoor air samples have been collected and the data results have been presented in the AKRF Soil Vapor Investigation Report, July 2007. For completeness, a brief summary of those results are presented herein.

The environmental samples were analyzed by methods stated in the NYSDEC-Analytical Services Protocol (ASP) and included the following analyses:

- Target Compound List (TCL) Volatile Organic Compounds (VOCs);
- TCL Semi-Volatile Organic Compounds (SVOCs);
- TCL Pesticides and Polychlorinated Biphenyls (PCBs);
- Target Analyte List (TAL) Metals;
- Cyanide; and
- Total Organic Carbon

The results of the 1998, 2004, and 2006 reports sampling investigation are summarized by environmental medium in Appendices F, G, H, respectively.

Data qualifiers are noted throughout the text and tables to indicate concentrations which are undetected (designated with a "U", "ND" or "--"); estimated ("J"); and/or rejected ("R"). A "B" found in the organics data indicates that the compound was also detected in an associated laboratory blank, possibly showing inter-laboratory contamination. In contrast, a "B" found in the inorganics data indicates that the element was detected above the instrument detection limit but below the method-specific and matrix-specific quantitation limit.

4.2 Holding Tank/Septic Tank/Leaching Pit Analytical Results

4.2.1 1998 RI/FS

One sludge and one water tank sample were collected from one Septic Tank, Pit A. In addition, a water sample was collected from one leach pit, Pit G, during the May 1997 site investigation. Please note that these two pits were renamed as LP-01 (G) and ST-01 (A). The samples were analyzed for TCL organics, TAL metals and cyanide, and/or TOC (sludge only). A summary of the detected constituents presented in 1998 Report can be found in Table 4-1 and on Figure 4-1. Analytical results from the 1998 RI/FS are presented in Tables F-2 through F-6 of Appendix F.

Three VOC constituents were present in the septic tank sludge samples. 2-Butanone, toluene and xylenes were detected at concentrations of 37 ug/kg, 14 ug/kg and 30 ug/kg, respectively. The water sampled from the septic tank contained none of these VOCs. 1,4-Dichlorobenzene was detected in SP-AQ at a concentration of 0.76 ug/L. Analysis of sample LP-AQ from Pit G

indicated concentrations of three chlorinated aliphatics (chlorine-substituted hydrocarbon compounds). These detected compounds were vinyl chloride at 2.2 ug/L, cis-1,2-dichloroethene at 4.8 ug/L, and trichloroethene at 0.92 ug/L.

The septic tank sludge in Pit A contained occurrences of eleven SVOCs, of which eight were polycyclic aromatic hydrocarbons (PAHs). Concentrations for the PAH constituents ranged from 200 ug/kg (benzo(a)pyrene) to 1,500 ug/kg (2-methylnaphthalene). The other three detected SVOCs were 1,4-dichlorobenzene at 4,200 ug/kg, bis(2-ethylhexyl)phthalate at 12,000 ug/kg, and di-n-octylphthalate at 330 ug/kg. The water samples from the septic tank (SP-AQ) and from the leach pit (LP-AQ) both contained bis(2-ethylhexyl)phthalate at concentrations of 2 ug/L. PAH compounds generally consist of two or more fused benzene rings, and occur from the burning of oils, wood, coal, gas, etc.; from wood processing and treating operations; and from the manufacture of plastics, chemicals and dyes. 1,4-Dichlorobenzene is utilized as a disinfectant, deodorant and chemical intermediate. The manufacture of plastics and rubber materials use phthalate compounds. It is noted that the existence of the PAH compounds is not typical of bi-products found in metals plating waste stream.

One pesticide and two PCBs were detected in the septic tank sludge. Sample SP-SL contained 11 ug/kg of 4,4'-DDE, 150 ug/kg of Aroclor-1248 and 72 ug/kg of Aroclor-1260. The septic tank water and the leach pit water samples contained no detectable levels of pesticide or PCB constituents.

Analysis of the septic tank sludge indicated detectable occurrences of 20 metals. Concentrations ranged from 0.49 mg/kg for mercury to 30,400 mg/kg for iron. In addition, cyanide was detected in the sludge at a concentration of 2,420 mg/kg. The septic tank water sample contained 18 inorganics (17 metals and cyanide), at concentrations up to 22,000 ug/L. Thirteen metal analytes and cyanide were detected in LP-AQ. Concentrations for the leach pit sample ranged from 1.4 ug/L (vanadium) to 9,500 ug/L (calcium). The concentration of TOC in the septic tank sludge was 52,000 mg/kg.

4.2.2 2004 Supplemental RI

Samples were collected from 11 leach pits at the Magna Metals Site. The 11 pits sampled were the southern septic tank (ST01), the northern septic tank (ST02), leach pit LP-02, LP-03, LP-05, LP-06, LP-06A, LP-07, LP-08, LP-09 and LP-0A. Samples were analyzed for TAL metals, TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TOC and cyanide. The results of these analyses are discussed below. Analytical results are presented in Table 4-2 and the distribution of exceedances are presented on Figure 4-2.

Of the soil/sludge samples collected from the eleven pits, all had metals results that exceeded the NYSDEC Recommended Soil Clean-up Criteria. Generally speaking, the samples collected below the sludge cake material had fewer exceedances and/or metals concentrations that were significantly lower than those of the overlying sludge material sampled from the same pit. The results of the soil samples were still in exceedance by many magnitudes. Depending on the analyte, metals results exceeded the NYSDEC Recommended Soil Clean-up Criteria.

One leach pit sample (ST-01 which was previously labeled Pit A in the 1998 RI/FS) had a volatiles exceedance. This sample exceeded the NYSDEC Recommended Clean-up Criteria for m/p-Xylenes.

Six of the leach pit samples (LP-02, LP-05, LP-07, LP-09, LP-0A, ST-02) had semi-volatile results that exceeded the NYSDEC Recommended Soil Clean-up Criteria. Of these six samples, three samples were of the sludge material, and the underlying soil samples from the corresponding leach pit had no semi-volatile exceedances. The exceedance samples collected from LP-0A and LP-09 contained both sludge cake material and underlying soil, as the sludge layer was very thin in these leach pits. A sample of the underlying soils from the northern septic tank (ST-02) was found to have semi-volatile results exceeding the NYSDEC Recommended Soil Clean-up Criteria. This sample was the only soil sample of underlying soils to contain semi-volatile compounds that were above the NYSDEC Recommended Soil Clean-up Criteria. Depending on the analyte, semi-volatile results for leach pit samples exceeded the NYSDEC Recommended Soil Clean-up Criteria.

Of the leach pit samples, no analytical results for PCBs or pesticides exceeded the NYSDEC Recommended Soil Clean-up Criteria.

4.3 Refuse Area Analytical Results

4.3.1 2004 Supplemental RI

One soil samples was collected from the apparent refuse area. The soil sample (RA) was collected from a depth of 2.5 – 3.0' below ground surface (bgs) and was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide, and TOC.

The refuse area soil sample had no volatile, semi-volatile, pesticide or PCB results that exceeded the NYSDEC Recommended Soil Clean-up Criteria.

Soil sampled from the former refuse area had metals results that were in excess of the NYSDEC Soil Clean-up Criteria. Depending on the analyte, metals results in the refuse area soil sample exceeded the NYSDEC Recommended Soil Clean-up Criteria.

4.4 Surface Water Analytical Results

4.4.1 1998 RI/FS

Twelve surface water samples and one duplicate sample were collected from the following locations: four surface water samples from the tributary, one sample after the confluence of the stream and tributary, one sample from the confluence of the stream and pond, two samples from the pond, one sample at the drainage culvert from the pond along Cross Roads Avenue, two samples in the wetlands area, and one upgradient sample from the stream. All of the surface water samples were analyzed for full NYSDEC-ASP TCL/TAL constituents and hardness. Results for these analyses are provided in Appendix F. Table 4-3 presents a summary of the detected constituents and their range of concentrations in the surface water samples. Constituents from the 1998 RI/FS report exceeding applicable criteria levels are plotted on Figure 4-1.

Five VOC compounds were detected in at least one of the surface water samples, and with the exception of the upstream background location (SW-12), every surface water sample contained at least one of the chlorinated aliphatic VOCs. Cis-1,2-dichloroethene and trichloroethene were present in a majority of the downgradient surface water samples (9 of 11 samples, or 82 percent). Concentrations for the VOCs ranged up to 18 ug/L (cis-1,2-dichloroethene in SW-9 from the wetlands). With the exception of trichloroethene, maximum concentrations for the VOCs were present in samples from the wetlands to the west of the site or the tributary to the south. Trichloroethene's maximum concentration (5.5 ug/L), in comparison, was detected in the furthest downgradient sample, the drainage culvert, SW-1.

Six SVOCs were detected in the surface water samples, at concentrations less than 4 ug/L. Bis(2-ethylhexyl)phthalate was the only SVOC constituent present in the upstream sample, SW-12, and this sample contained the maximum concentration of this constituent (3 ug/L). 4-Methylphenol, fluoranthene and pyrene were only detected in one of the two wetland surface water samples. One sample from each of the tributary, pond and drainage culvert locations contained diethylphthalate and hexachlorobenzene.

None of the surface water samples analyzed for pesticides and PCBs contained detectable levels of these constituents.

Twenty metals and cyanide were detected in at least one of the surface water samples collected during the investigation, and five inorganics (copper, iron, mercury, zinc, and cyanide) were present at concentrations greater than their respective applicable criteria levels. With the exception of iron, which exceeded in 10 of 12 sampled locations, criteria exceedances for the inorganics were generally located in the tributary, wetlands and drainage culvert samples. Concentrations of a majority of metals were greater, in the downgradient tributary (SW-6 specifically) and/or wetlands (SW-7 and SW-9) surface water samples in comparison to the upstream sample (SW-12).

Hardness of the surface water samples ranged from approximately 102 mg/L (SW-11) to 479 mg/L (SW-9); see Table F-11 of Appendix F. With the exception of location SW-9, the hardness concentrations were greater in comparison to the upstream sample. Analysis of the surface water sample from SW-9 indicated a concentration of hardness higher than the background. As stated above, this location contained elevated levels of numerous metals, and had calcium (40,600 ug/L) and magnesium (68,600 ug/L) concentrations which were greater than background (see Table 4-3).

4.5 Sediment Analytical Results

4.5.1 1998 RI/FS

Twelve sediment samples and one duplicate sample were collected from the same locations as the surface water samples. The sediment samples were analyzed for NYSDEC-ASP TCL organics, TAL inorganics and/or TOC. Results for these analyses are provided in Appendix F. A summary of the detected constituents and their range of concentrations in the sediment samples is presented in Table 4-5. Constituents present at concentrations exceeding applicable criteria levels are plotted on Figure 4-1.

The sediment samples contained occurrences of ten VOCs, as shown in Table 4-5. Of these ten, two of the chlorinated volatiles (vinyl chloride and trichloroethene) were also detected during the surface water investigation. The concentration of vinyl chloride from sample SD-9 (25 ug/kg) was greater than its normalized sediment criteria level. The surface water from this wetlands location had contained the maximum concentration for vinyl chloride (2.5 ug/L).

Twenty-three SVOCs were detected in the sediments, and there were 18 PAH compounds, three phthalate compounds, one phenolic compound, and one chlorinated aliphatic compound (see Table 4-5). The PAHs were detected at concentrations less than 2,701 ug/kg, in all of the sediment samples, with the exception of the upstream location SD-12. As presented on Table 4-5 and Figure 4-2, six PAHs (benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene) were present at concentrations exceeding applicable criteria levels. These exceedances occurred in 64 percent of the locations (i.e., 7 of 11). A majority of the maximum concentrations (16 of 18, or 89 percent) for all of the PAH compounds occurred in the sediment sample collected from the drainage culvert near Cross Road Avenue (SD-1). Since these levels are greater than those upgradient, there is a strong potential that road runoff acts as a contributor. As shown on Table 4-5, the three phthalate compounds were generally detected below 1,000 ug/kg, and were present in the further downstream sediment samples (SD-6 through SD-1). Analysis of pond sediment sample SD-3 indicated 160 ug/kg of 4-chloro-3-methylphenol, which exceeds its normalized sediment criteria level of 50.5 ug/kg. Location SD-10 contained hexachloroethane at 960 ug/kg. No other detections of these two SVOCs were found during the sediment investigation.

Alpha-chlordane and gamma-chlordane were detected in tributary sediment sample SD-10, as presented in Table 4-5. Concentrations for these two pesticides were 3.5 ug/kg and 3.4 ug/kg, respectively, and both are greater than applicable criteria levels. No detections of pesticides or PCBs were found in the downgradient samples analyzed (SD-1DUP and SD-4).

Twenty-one of the 24 TAL inorganics were detected in at least one of the sediment locations (see Table 4-5). Chromium, copper, nickel, and zinc had concentrations that exceeded their respective guidance sediment criteria values. As present on Figure 4-1, the exceedance for chromium occurred at SD-9 (144 mg/kg), while those for zinc were at SD-5 (441 mg/kg), SD-6 (938 mg/kg) and SD-7 (1,890 mg/kg). Both copper and nickel were detected above criteria at locations SD-1 through SD-7 and SD-9 (see Figure 4-1). Exceedance concentrations for copper and nickel were found greater than criteria. As with the surface water investigation, numerous metals were present in locations SD-6 (tributary), SD-7 (wetlands) and SD-9 (wetlands) at more elevated concentrations in comparison to upgradient levels. Concentrations for these samples were greater than the SD-12 samples, as shown in Table 4-5.

Total organic carbon for the sediments ranged considerably in concentration (Appendix F). The upstream background sample contained 2,590 mg/kg. TOC concentrations ranged from 2,510 mg/kg to 160,000 mg/kg for the samples directly to the west, southwest and south of the site (SD-5 through SD-11). Analysis of the further downgradient sediment samples indicated TOC from 38,100 mg/kg to 169,000 mg/kg.

4.5.2 2004 Supplemental RI

Fourteen sediment samples and one duplicate sample were collected and analyzed for PAHs and TAL metals. PAH analytical results for sediment samples are presented in Table 4-6A, and metals analytical results for sediment samples are presented in Table 4-6B. The distribution of exceedances in sediment samples is presented in Figure 4-3.

Six of the 14 samples contained PAH compounds that were in excess of the NYSDEC sediment criteria. The distribution of PAHs in sediments is presented in Figure 4-3. Depending on the analyte, PAH results in sediments exceeded applicable criteria.

PAHs were not detected in sediment samples SD-13 and SD-14, collected upgradient of the confluence of Furnace Brook and the unnamed tributary. However PAHs were detected in sediment samples collected in the unnamed tributary and downgradient of the confluence of Furnace Brook and the unnamed tributary, including sediment sample SD-17 which was collected upgradient of the site. It is possible that PAHs detected in sediment samples have been transported by stormwater runoff from Furnace Dock Road, which crosses the unnamed tributary upgradient of sediment sample location SD-17.

Metals results exceeded criteria in 13 of the 14 sediment samples (Table 4-6B). Metals were not detected in the upgradient sample SD-17 collected in the unnamed tributary. Only one metal, nickel, was detected at approximately 1.26 times the criterion in the sediment sample SD-13, collected upgradient of the site in Furnace Brook. Metals found to be above criteria were chromium, copper, lead, nickel and zinc. The distribution of metals exceedances in sediment samples is presented in Figure 4-3. Depending on the analyte, metals results exceeded criteria.

4.6 Surface Soil Analytical Results

4.6.1 1998 RI/FS

Five surface (i.e., 0 to 12 inches in depth) soil samples and one duplicate were collected on April 11, 1997, and one surface soil sample was collected on November 17, 1997. Samples SS-1, SS-2 and SS-3 were collected to the west and downgradient of the on-site tanks/pits. Samples SS-4 and SS-5 are upgradient background surface soils, collected north and southeast of the site, respectively. The surface soil samples were analyzed for NYSDEC-ASP TCL/TAL constituents and/or TOC. Results for these analyses are provided in Appendix F. Table 4-7 presents a summary of the detected constituents and their range of concentrations in the surface soil samples, and Figure 4-1 plots the constituents detected at concentrations exceeding applicable criteria levels.

No volatile organics were detected in the surface soils (Appendix F).

As shown in Table 4-7, the surface soils collected from the three on-site locations (SS-1, SS-2 and SS-3) contained concentrations of 14 SVOCs, including 11 PAH and 3 phthalate compounds. Detected levels ranged from 8 ug/kg (anthracene) to 4,900 ug/kg (bis(2-ethylhexyl)phthalate). Benzo(a)pyrene was the only SVOC to exceed its applicable criteria value, and it was present at 97 ug/kg in SS-1 (see Figure 4-1). The concentrations of di-n-butylphthalate and bis(2-ethylhexyl)phthalate may not be related to site activities, as these

constituents were present in associated blank samples. Analysis of the off-site surface soils indicated concentrations of ten SVOCs, of which nine were also detected in the on-site samples. In general, the on-site concentrations were relatively equivalent or less than the off-site concentrations.

Three pesticides and two PCBs, as presented in Table 4-7, were detected in the on-site and/or off-site surface soil locations. 4,4'-DDE and 4,4'-DDT were present in 4 and 5 samples, respectively, at relatively equivalent concentrations for both the on-site (detected range: 5 ug/kg to 10 ug/kg) and off-site (detected range: 4.3 ug/kg to 8.9 ug/kg) surface soils. Sample SS-2 also contained 7.1 ug/kg of 4,4'-DDD. PCB analysis of the surface soils indicated Aroclor-1254 and Aroclor-1260 in the surface soils from locations SS-1 and SS-2. As shown on Table 4-7, concentrations ranged up to 62 ug/kg for Aroclor-1254 and up to 46 ug/kg for Aroclor-1260.

Analysis of the surface soils indicated concentrations of 18 metals (see Table 4-7). Fourteen of these analytes were present at levels of equal or lesser magnitude on-site in comparison to off-site samples. Calcium, copper, potassium and zinc were detected at concentrations greater than background/applicable criteria levels. Exceedance concentrations of calcium and potassium occurred in all three on-site locations, and ranged from 1,280 mg/kg to 1,540 mg/kg for calcium and from 526 mg/kg to 768 mg/kg for potassium. Copper was 177 mg/kg in SS-1 (with a duplicate of 51.7 mg/kg) and 39 mg/kg in SS-2. These two locations also contained exceedance concentrations of zinc, 124 mg/kg in SS-1 and 68.7 mg/kg in SS-2. Sample SS-3 had a zinc concentration of 41.5 mg/kg, exceeds its criteria level of 41.1 mg/kg.

Total organic carbon content of the SS-2 surface soils is 8,760 mg/kg. Results for TOC are presented in Appendix F.

4.6.2 2004 Supplemental RI

Ten surface soil samples (SS-06 through SS-15) were collected at the Magna Metals Site. Surface soil samples were collected from a depth of 0 to 2-inches bgs and were analyzed for TCL VOCs, TAL metals and cyanide. A summary of the surface soil results is provided in Table 4-8, and the distribution of exceedances in surface soil samples is presented in Figure 4-2.

None of the surface soil samples had volatile results that exceeded the NYSDEC Recommended Soil Clean-up Criteria.

Seven of the surface soil samples collected from the Magna Metals Site had metals results that exceeded the NYSDEC Recommended Soil Clean-up Criteria. Depending on the analyte, metals results in the surface soil samples exceeded the criteria.

4.7 Subsurface Soil Analytical Results

4.7.1 1998 RI/FS

Seven soil borings (SB-1 through SB-7) were drilled adjacent to the septic tanks/leach pits on December 10 and 11, 1996. Soil samples were collected from the interval equivalent to the bottom of the tank/pit. A total of seven samples and one duplicate were collected, and the soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, and TAL

metals and cyanide. Additional subsurface soil samples were collected during the installation of the monitoring wells on November 17 through 19, 1997. Boring MW-1 was located sidegradient to the site as background. Locations MW-1 through MW-4 were sampled from the 6 to 8-foot and/or 12 to 14-foot bgs depth intervals. Seven subsurface soil samples and one duplicate were analyzed for TCL/TAL constituents and/or TOC. Results for these analyses are provided in Appendix F. A summary of the detected constituents and their range of concentrations in the subsurface soil samples is presented in Table 4-9. Figure 4-1 plots the constituents detected at concentrations exceeding applicable criteria levels.

Seven VOCs were detected in the subsurface soils collected from the site, and the analytical results are presented in Table 4-9. Methylene chloride and/or acetone were present in a majority of the samples (i.e., almost 79 percent for methylene chloride and 50 percent for acetone), including the background boring MW-1. Due to their widespread occurrence, their presence in associated blank samples, and their laboratory and decontamination use, these constituents are likely not related to site activities. Four VOCs (2-butanone, 4-methyl-2-pentanone, 2-hexanone and 1,1,2,2-tetrachloroethane) were detected at concentrations less than 6 ug/L, in the duplicate soil sample from MW-2 at 6 to 8 feet bgs. The 3.5 to 5.5-foot soils from SB-7, drilled to the southwest of Leach Pit G, contained trichloroethene (35 ug/kg, with a duplicate of 29 ug/kg).

Analysis of the subsurface soils indicated detectable levels of six PAHs and five phthalates (see Table 4-9). The PAHs were present from 4 feet bgs to 9.5 feet bgs, at locations SB-1, SB-2, SB-5 and MW-4. Concentrations of these constituents ranged up to only 160 ug/kg, and were below applicable criteria levels. The concentrations of diethylphthalate, di-n-butylphthalate and bis(2-ethylhexyl)phthalate may not be related to site activities, as these constituents were present in associated blank samples; see Table 4-9. The other two phthalate compounds (butylbenzylphthalate and di-n-octylphthalate) were detected at concentrations from 13 ug/kg to 43 ug/kg.

Pesticide/PCB results for the subsurface soil analyses are presented in Appendix F, and are summarized on Table 4-9. One pesticide (alpha-chlordane) was detected at 2 ug/kg in soil boring SB-4. The samples from the soil borings installed near the septic tank/leach pit area also contained Aroclor-1254. This PCB was found in SB-3 at 8 to 9.5 feet bgs (24 ug/kg), SB-4 at 6.5 to 8.5 feet bgs (160 ug/kg), and SB-7 at 3.5 to 5.5 feet bgs (280 ug/kg, with a duplicate of 240 ug/kg). In addition, as shown in Table 4-9, analysis of the 12 to 14-foot bgs soils of monitoring well boring MW-4 indicated eight pesticides. Concentrations for these pesticides ranged up to 0.98 ug/kg. The existence of pesticides on the site has no historical documentation.

Eighteen of the 21 inorganics detected in the subsurface soils had concentrations that exceeded applicable criteria levels. As shown in Table 4-9, only cobalt, vanadium and cyanide were present at concentrations less than their respective criteria. Exceedance concentrations were found in all on-site locations (see Figure 4-2 and Table 4-9). Maximum concentrations for the metals and cyanide were distributed throughout the boring locations, with the highest number (8) present in SB-7 at 3.5 to 5.5 feet bgs.

Samples for TOC analysis were collected from MW-1 (12 to 14 feet bgs), MW-2 (12 to 14 feet bgs), MW-3 (6 to 8 feet bgs), and MW-4 (12 to 14 feet bgs) in November 1997. The result

concentrations were relatively equivalent, with the detected levels ranging from 806 mg/kg to 1,360 mg/kg (see Appendix F).

4.8 Groundwater Analytical Results

4.8.1 1998 RI/FS

One round of groundwater samples was obtained from the four newly installed monitoring wells in May 1998. The samples and a duplicate were analyzed for TCL organics and TAL inorganics, and tabulated results are provided in Appendix F. Sample GW-1 was collected from a sidegradient well for a background sample. Table 4-10 presents a summary of the detected groundwater constituents and their range of concentrations. Those constituents found at concentrations exceeding applicable criteria levels are plotted on Figure 4-1.

The groundwater collected from beneath the site contained trichloroethene and tetrachloroethene, two chlorinated aliphatic solvents). Trichloroethene was detected in all of the sampling locations but the background (GW-1), with concentrations ranging from 3.7 ug/L to 4,700 ug/L. As shown in Figure 4-1, it exceeded its applicable criteria level of 5 ug/L in GW-3 (68 ug/L) and GW-4 (4,700 ug/L). The subsurface soils from this location had contained 4 ug/kg of trichloroethene. Tetrachloroethene was present in the duplicate sample from location GW-4, at an exceedance concentration of 90 ug/L.

As shown in Table 4-10, bis(2-ethylhexyl)phthalate was the only identifiable SVOC detected in the groundwater (0.9 ug/L), and it was present in sample GW-5, the duplicate of GW-4. Due to its presence in associated blank samples, bis(2-ethylhexyl)phthalate is not related to site activities.

The groundwater was analyzed for pesticides/PCBs, and the results are presented in Appendix F. As shown in the summary table (Table 4-10), 11 pesticides were detected at concentrations ranging from 0.00022 ug/L to 0.11 ug/L. Three of these constituents, beta-BHC in GW-3 and GW-4, heptachlor epoxide in GW-2 and GW-3, and 4,4'-DDT in GW-3, were present at concentrations greater than the method detection levels, indicating exceedances of the groundwater criteria. The existence of pesticides in the groundwater may be related to their distribution in the surface and subsurface soils from non-point sources.

Of the 24 TAL inorganics, only four (beryllium, mercury, silver, and thallium) were not detected in the samples collected during the groundwater investigation (see Table 4-10). In general, maximum concentrations for the inorganics were located in the GW-2 sample, which is located to the south-southeast of the septic tanks/leach pits. As shown in Figure 4-1, among the detected metals, exceedances occurred for antimony, arsenic, chromium, iron, manganese, selenium, sodium, zinc, and cyanide. Only sodium had a concentration in the background sample GW-1 that also exceeded applicable criteria levels.

4.8.2 2004 Supplemental RI

Seven of the nine monitoring wells at the Magna Metals Site were sampled during the fall of 2003. Five of the monitoring wells were over burden wells (MW-01, MW-02, MW-04, MW-05, and MW-08) and two were bedrock monitoring wells (MW-04D and MW-07). All of the

groundwater samples were analyzed for TCL VOCs, TAL metals and cyanide. Samples from MW-01 and MW-04 were additionally analyzed for dissolved metals due to the turbidity of the sample. Table 4-11 provides a summary of the groundwater sample results, and the distribution of contaminant exceedances in groundwater samples is presented in Figure 4-4.

Groundwater Volatiles Results

Samples from three of the monitoring wells (MW-02, MW-04 and MW-04D) had VOC results that exceeded the NYSDEC Groundwater Quality Standards. The volatile compounds in excess included tetrachloroethene, trichloroethene and cis-1,2-dichloroethene. Depending on the analyte, volatile results in the groundwater samples exceeded the NYSDEC Groundwater Quality Standards.

Groundwater Inorganics Results

Samples all seven monitoring wells and the duplicate sample had metals results that exceeded the NYSDEC Groundwater Quality Standards. Groundwater sampled from MW-04 also had dissolved metals results that exceeded NYSDEC standards. Depending on the analyte, metals results in the groundwater samples exceeded the NYSDEC Groundwater Quality Standards.

4.8.3 2006 Additional Data Findings

Groundwater samples collected from wells MW-09 and MW-10 did not indicate elevated levels of contaminants. These wells were installed in close proximity to the former Magna Metals building due to potential concerns of source material below the structure. Monitoring well MW-11 had a concentration of 190 ppb for trichloroethene. The well was located near leach pit LP-09. As such, the result is consistent with prior conclusion drawn from the 1998 and 2004 report, that is, the leach pits are the source of soil and groundwater contamination at the site. Concurrent with sampling of the monitoring wells installed in 2005 (MW-9, MW-10, and MW-11), previously installed wells MW-02, MW-03, MW-04, and MW-06 were sampled and indicated exceedance of trichloroethene ranging from 17 ppb to 270 ppb in three of four wells and one occurrence of Tetrachloroethene of 7.5 ppb. One well, MW-02 did not indicate contamination present. The wells were located adjacent to the leach pits and the data is consistent with previous findings. Figure 4-5 and Table 4-12 presents the exceedance in groundwater.

4.9 Soil Gas (2006)

The soil gas sample results from the 2006 investigation documented that VOCs were detected at concentrations ranging from 1 to 1,900 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), an elevated level of TCE, $59 \mu\text{g}/\text{m}^3$ at SV-03 was detected next to the office/warehouse building. Lower levels of TCE were recorded at the other two locations adjacent to the office building/warehouse. Elevated VOCs were detected in soil gas locations located along the leach pit series. The results are consistent with previously collected groundwater data, that is the leach pits are the source of contamination at the site. Figure 4-6 and Table 4-13 presents the soil vapor sample data.

Appendix K contains the indoor air quality questionnaire and building inventory.

4.10 AKRF 2007 Subslab Vapor and Indoor Air Results

Five sub-slab and six indoor air samples were collected and analyzed for VOCs as part of the 2007 investigation. The results were presented as part of the July 2007 Soil Vapor Investigation Report, AKRF. For completeness, these results are summarized herein.

For the sub-slab samples, TCE detection of 1,200 $\mu\text{g}/\text{m}^3$ and 66,000 $\mu\text{g}/\text{m}^3$ were recorded at locations SV-11 and SV-12, respectively, above the action levels in Matrix 1 in NYSDOH's *Soil Vapor Intrusion Guidance* (October 2006). For PCE, two detections of 5.5 and 7.8 $\mu\text{g}/\text{m}^3$ were both below the lowest action level of 100 $\mu\text{g}/\text{m}^3$ in Matrix 2 and also below the EPA BASE 90th percentile value of 15.9 $\mu\text{g}/\text{m}^3$. 1,1,1-trichloroethane (TCA) was not detected in any of the samples. Carbon tetrachloride was detected in one sample at a concentration of 0.53 $\mu\text{g}/\text{m}^3$, which was similar to the outdoor air samples. At location SV-12, a value of 11,000 $\mu\text{g}/\text{m}^3$ was recorded for cis-1,2-dichloroethene (DCE), a breakdown product of TCE. Toluene was detected in all samples with a maximum value of 3,300 $\mu\text{g}/\text{m}^3$ at location SV-12. Cyclohexane was detected in all but one of the samples with a maximum value of 170 $\mu\text{g}/\text{m}^3$ at location SV-11.

There were no exceedences of the NYSDOH guidance values for either PCE (100 $\mu\text{g}/\text{m}^3$) or TCE (5 $\mu\text{g}/\text{m}^3$) in any of the indoor air samples. Toluene was detected at all locations, with the highest values of 31 $\mu\text{g}/\text{m}^3$ and 19 $\mu\text{g}/\text{m}^3$ at locations SV-13 (Motion Labs) and SV-14 (Polymedco warehouse), respectively. The only other detection greater than 10 $\mu\text{g}/\text{m}^3$ in indoor air samples was for n-heptane, with a value of 17 $\mu\text{g}/\text{m}^3$ at location SV-13. All detections of other compounds were at levels similar to the outdoor air samples and below the EPA BASE 90th percentile values.

Table 4-14 presents the soil vapor sample data for the 2007 investigation.

TABLE 4-1
Summary of Detected Constituents
Holding Tank/Septic Tank/Leaching Pit Analytical Results
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	Septic Tank A Sludge (SP-SL)	Septic Tank A Water (SP-AQ)	Leach Pit G Water (LP-AQ)
Volatile Organic Compounds (ug/kg sludge; ug/L water)			
Vinyl Chloride	--	--	2.2
cis-1,2-Dichloroethene	NA	--	4.8
2-Butanone	37 J	R	R
Trichloroethene	--	--	0.92 J
Toluene	14 J	--	--
Xylene (total)	30 J	--	--
1,4-Dichlorobenzene	NA	0.76 J	--
Semi-Volatile Organic Compounds (ug/kg sludge; ug/L water)			
1,4-Dichlorobenzene	4,200 J	--	--
2-Methylnaphthalene	1,500 J	--	--
Fluoranthene	1,200 J	--	--
Pyrene	300 J	--	--
Benzo(a)anthracene	230 J	--	--
Chrysene	280 J	--	--
bis(2-Ethylhexyl)phthalate	12,000 JD	2 J	2 J
Di-n-octylphthalate	330 J	--	--
Benzo(b)fluoranthene	330 J	--	--
Benzo(k)fluoranthene	240 J	--	--
Benzo(a)pyrene	200 J	--	--
Pesticide/PCB Compounds (ug/kg sludge; ug/L water)			
4,4'-DDE	11 JP	--	--
Aroclor-1248	150 JP	--	--
Aroclor-1260	72 JP	--	--
Inorganics (mg/kg sludge; ug/L water)			
Aluminum	16,100 J	80.8 B	162 B
Antimony	5.9 JB	3.1 B	--
Arsenic	402 J	3.4 B	88.8
Barium	174 J	20.4 B	23.8 B
Cadmium	6.4 J	--	--
Calcium	9,760 J	22,000	9,500

TABLE 4-1
Summary of Detected Constituents
Holding Tank/Septic Tank/Leaching Pit Analytical Results
Page 2 of 2

	Septic Tank A Sludge (SP-SL)	Septic Tank A Water (SP-AQ)	Leach Pit G Water (LP-AQ)
Chromium	R	2 B	--
Cobalt	34 JB	1.8 B	--
Copper	1,160 J	167	154
Iron	30,400 J	582 J	256 J
Lead	228 J	R	R
Magnesium	5,940 J	2,560 B	536 B
Manganese	815 J	72.5	28.2
Mercury	0.49 J	--	--
Nickel	10,400 J	788	45.9
Potassium	1,120 JB	2,900 JB	704 JB
Selenium	200 J	14.3	3.2 B
Silver	0.97 JB	--	--
Sodium	717 JB	4,500 B	--
Thallium	--	--	--
Vanadium	32.9 JB	1.1 B	1.4 B
Zinc	9,660 J	230 J	286 J
Cyanide	2,420 J	39.3	12.7

Notes:

-- = Constituent not detected.

J = Constituent value is estimated.

R = Constituent value is rejected and deemed unusable.

D = Constituent value is from a dilution analysis.

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

NA = Not analyzed/not available.

Table 2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-02 MM-LP02-073003 07/30/2003 10	LP-02 MM-LP02-08260310.010 08/26/2003 10.75	LP-03 MM-LP03-073003 07/30/2003 7.75	LP-03 MM-LP13-073003 Duplicate of MM-LP03-073003
Constituent						
m/p-Xylenes	(ug/kg)	1200	9UJ	3U	9.3UJ	11UJ
Benzo(a)anthracene	(ug/kg)	224	220J	35UJ	110UJ	130UJ
Benzo(a)pyrene	(ug/kg)	61	230J	53UJ	160UJ	190UJ
Benzo(b)fluoranthene	(ug/kg)	1100	270J	35UJ	110UJ	130UJ
Chrysene	(ug/kg)	400	220J	56UJ	180UJ	200UJ
Dibenz(a,h)anthracene	(ug/kg)	14	160UJ	53UJ	170UJ	190UJ
Aluminum	(mg/kg)	5040*	5700J	4450	5340J	4500J
Arsenic	(mg/kg)	7.5	627J	9.7J	947J	1190J
Barium	(mg/kg)	300	124J	29.5	199J	222J
Beryllium	(mg/kg)	0.32*	0.14J	0.13J	0.6J	0.43J
Cadmium	(mg/kg)	1	13.7J	0.05U	16.2J	19.2J
Calcium	(mg/kg)	1690*	9920J	1380	11000J	13600J
Chromium	(mg/kg)	10	2690J	34.1J	3980J	4070J
Cobalt	(mg/kg)	30	62.3J	3.4J	74.5J	86.6J
Copper	(mg/kg)	25	33500J	203	27200J	31300J
Iron	(mg/kg)	10000*	22500J	5880	32000J	35000J
Lead	(mg/kg)	3.7*	649J	6.2	849J	1030J
Magnesium	(mg/kg)	2100*	2910J	1570	4210J	4950J
Manganese	(mg/kg)	250*	610J	83J	713J	864J
Nickel	(mg/kg)	15*	38200J	226	53800J	62900J
Potassium	(mg/kg)	864*	580J	451J	463J	405J
Selenium	(mg/kg)	2	473J	13J	1120J	1410J
Sodium	(mg/kg)	86.8*	9060J	124J	6980J	8690J
Thallium	(mg/kg)	ND*	1.8UJ	0.62U	2UJ	2.2UJ
Zinc	(mg/kg)	23.3*	37300J	235	28900J	35600J
Mercury	(mg/kg)	0.1	0.92J	0.01U	0.75J	1.1J

Notes:

U - Non-detect

J - Estimated

D - Dilution

R - Rejected

Shading & [] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

Table 4-2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-03 MM-LP03-0905031.3-2 09/05/2003 9	LP-05 MM-LP05-073003 07/30/2003 8.5	LP-05 MM-LP05-0905031.0-1 09/05/2003 8.7	LP-06 MM-LP06-0905030.3-0 09/05/2003 7.8
Constituent						
m/p-Xylenes	(ug/kg)	1200	3.8U	3.7U	2.9U	6.8UJ
Benzo(a)anthracene	(ug/kg)	224	57J	510J	35U	80UJ
Benzo(a)pyrene	(ug/kg)	61	67U	500J	52U	120UJ
Benzo(b)fluoranthene	(ug/kg)	1100	44U	550J	35U	80UJ
Chrysene	(ug/kg)	400	71U	540J	55U	130UJ
Dibenz(a,h)anthracene	(ug/kg)	14	67U	66UJ	52U	120UJ
Aluminum	(mg/kg)	5040*	14700	9670	4560	7110J
Arsenic	(mg/kg)	7.5	103	37.8	19.4	376J
Barium	(mg/kg)	300	142	104	50.4	223J
Beryllium	(mg/kg)	0.32*	0.43J	0.35J	0.20J	0.31UJ
Cadmium	(mg/kg)	1	0.7	1.2	0.13U	1.3J
Calcium	(mg/kg)	1690*	3000	3620	3190	2840J
Chromium	(mg/kg)	10	0.25R	535	0.20R	0.45R
Cobalt	(mg/kg)	30	0.32R	11.1	0.25R	0.57R
Copper	(mg/kg)	25	987	246	152	34700JD
Iron	(mg/kg)	10000*	18500	12400	20000	22200J
Lead	(mg/kg)	3.7*	67.2	66	10.5	858J
Magnesium	(mg/kg)	2100*	5380	3150	1770	3560J
Manganese	(mg/kg)	250*	229	274	206	262J
Nickel	(mg/kg)	15*	2380	2070	340	63700JD
Potassium	(mg/kg)	864*	1430J	654J	589J	1050J
Selenium	(mg/kg)	2	184	16.9	29.8	178J
Sodium	(mg/kg)	86.8*	574J	699J	111J	1520J
Thallium	(mg/kg)	ND*	0.41U	0.77U	0.33U	23.6J
Zinc	(mg/kg)	23.3*	4940	2240J	693	15900J
Mercury	(mg/kg)	0.1	0.1	0.13J	0.02	0.02UJ

Notes:

U - Non-detect

J - Estimated

D - Dilution

R - Rejected

Shading & [] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

Ta 1-2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-06 MM-LP06-0905030-0.3 09/05/2003 7.3	LP-06A MM-LP06A-101003 10/10/2003 11	LP-06A MM-LP06A-1010032-2.5 10/10/2003 11.5	LP-07 MM-LP07-0905030-0.1 09/05/2003 7.1
Constituent						
m/p-Xylenes	(ug/kg)	1200	5.4U	3.5U	5.5U	24
Benzo(a)anthracene	(ug/kg)	224	180J	51J	65U	[470]
Benzo(a)pyrene	(ug/kg)	61	94U	62U	97U	[360]J
Benzo(b)fluoranthene	(ug/kg)	1100	210J	62J	65U	730
Chrysene	(ug/kg)	400	220J	66U	100U	[620]
Dibenz(a,h)anthracene	(ug/kg)	14	95U	62U	98U	[89]J
Aluminum	(mg/kg)	5040*	[10000]	[10500]	[8730]	3270
Arsenic	(mg/kg)	7.5	[10.3]	[29.3]	[609]	[79.1]
Barium	(mg/kg)	300	152	67.3	111	61.8
Beryllium	(mg/kg)	0.32*	[0.68]J	[0.37]J	0.26U	0.15U
Cadmium	(mg/kg)	1	0.23U	0.15U	[7.2]	0.14U
Calcium	(mg/kg)	1690*	[16800]	[3950]	[3550]	[1990]
Chromium	(mg/kg)	10	0.37R	[440]	[5050]	0.22R
Cobalt	(mg/kg)	30	5.8J	16.3	[34.0]	0.28R
Copper	(mg/kg)	25	[483]	[3580]	[15000]D	[9710]D
Iron	(mg/kg)	10000*	[18600]	[14100]	[18700]	8260
Lead	(mg/kg)	3.7*	[268]	[39.5]J	[279]J	[197]
Magnesium	(mg/kg)	2100*	[3450]	[3370]	[2870]	1890
Manganese	(mg/kg)	250*	[715]	[330]	[344]	135
Nickel	(mg/kg)	15*	[781]	[2940]	[23200]D	[45600]
Potassium	(mg/kg)	864*	[1640]J	607J	402J	567J
Selenium	(mg/kg)	2	[3.1]	[80.1]	[733]	[53.5]
Sodium	(mg/kg)	86.8*	[2750]	[303]J	[964]J	[544]J
Thallium	(mg/kg)	ND*	0.60U	0.39U	[8.1]	[16.9]
Zinc	(mg/kg)	23.3*	[386]	[2100]J	[8570]J	[7020]
Mercury	(mg/kg)	0.1	[0.17]	[0.15]	[0.50]	0.09

Notes:

U - Non-detect

J - Estimated

D - Dilution

R - Rejected

Shading & [] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

Table 4-2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-07 MM-LP07-0905030.1-0 09/05/2003 7.5	LP-08 MM-LP08-0905030-0.3 09/05/2003 7.3	LP-08 MM-LP18-0905030-0.3 Duplicate of MM-LP08-0905030-0.3	LP-08 MM-LP08-0905030.3-0 09/05/2003 7.6
Constituent						
m/p-Xylenes	(ug/kg)	1200	3.0U	3.1U	3.1U	5.5J
Benzo(a)anthracene	(ug/kg)	224	44J	36U	37U	36U
Benzo(a)pyrene	(ug/kg)	61	54U	55U	55U	54U
Benzo(b)fluoranthene	(ug/kg)	1100	44J	36U	37U	36U
Chrysene	(ug/kg)	400	57U	58U	58U	57U
Dibenz(a,h)anthracene	(ug/kg)	14	54U	55U	55U	54U
Aluminum	(mg/kg)	5040*	[5200]	[5110]	4080	3760
Arsenic	(mg/kg)	7.5	[16.7]	[8.6]	[7.6]	3.8
Barium	(mg/kg)	300	116	26.7	21.9J	20.1J
Beryllium	(mg/kg)	0.32*	[0.46]J	0.20J	0.17J	0.18J
Cadmium	(mg/kg)	1	0.13U	0.13U	0.13U	0.13U
Calcium	(mg/kg)	1690*	[3300]	1460	1310	1200
Chromium	(mg/kg)	10	0.21R	0.21R	0.21R	0.21R
Cobalt	(mg/kg)	30	0.26R	0.27R	5.3J	5.3J
Copper	(mg/kg)	25	[185]	[210]	[214]	[35.3]
Iron	(mg/kg)	10000*	[19500]	7990	6680	6020
Lead	(mg/kg)	3.7*	[22.7]	[15.3]	[19.1]	2.9
Magnesium	(mg/kg)	2100*	[6700]	[2110]	1650	1680
Manganese	(mg/kg)	250*	[280]	97	89.4	97.8
Nickel	(mg/kg)	15*	[2510]	[468]	[399]	[99.3]
Potassium	(mg/kg)	864*	[1260]J	550J	442J	447J
Selenium	(mg/kg)	2	[4.7]	[2.1]	1.5	0.98
Sodium	(mg/kg)	86.8*	[289]J	[118]J	111U	108U
Thallium	(mg/kg)	ND*	0.34U	0.34U	0.35U	0.34U
Zinc	(mg/kg)	23.3*	[962]	[440]	[402]	[220]
Mercury	(mg/kg)	0.1	0.01R	0.01U	0.01U	0.01U

Notes:

U - Non-detect

J - Estimated

D - Dilution

R - Rejected

Shading & [] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

TABLE 4-3
Summary of Detected Constituents
Surface Water Analytical Results
Page 1 of 2

	NYSDEC Water Quality Standards/ Guidance Values (Class C)	Wetlands (SW-7, SW-9)	Tributary (SW-6, SW-8, SW-10, SW-11)	Confluence of Tributary and Stream (SW-5)	Confluence of Pond and Stream (SW-4)	Pond (SW-2, SW-3)	Drainage Culvert (SW-1, SW-1DUP)	Upstream (SW-12)
Volatile Organics (ug/L)								
Vinyl Chloride	NC	ND - 2.5	ND - 0.91 J	--	0.7 J	--	--	--
Methylene Chloride	NC	ND - 2.3	--	--	--	--	--	--
cis-1,2-Dichloroethene	NC	ND - 18	5.1 - 9	2.1	4.5	3.2 - 3.3	3.5 - 4.2	--
Chloroform	NC	--	0.77 J - 1.6	--	--	--	--	--
Trichloroethene	11	ND - 0.73 J	ND - 1.4	2.2	2.6	2.3 - 2.4	2.7 - 5.5	--
Semi-Volatile Organics (ug/L)								
4-Methylphenol	5	ND - 0.2 J	--	--	--	--	--	--
Diethylphthalate	NC	--	ND - 0.2 J	--	--	ND - 0.2 J	ND - 0.3 J	--
Hexachlorobenzene	NC	--	ND - 0.3 J	--	--	ND - 0.3 J	ND - 0.2 J	--
Fluoranthene	NC	ND - 0.3 J	--	--	--	--	--	--
Pyrene	NC	ND - 0.3 J	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	NC	ND - 1 J	ND - 0.7 J	0.6 J	--	--	ND - 2 J	3 J
Inorganics (ug/L)								
Aluminum	NC	8,960 - 13,100	41.9 B - 2,660	178 B	103 B	126 B - 454	54.2 B - 135 B	64.8 B
Antimony	NC	ND - 4.9 B	ND - 3.5 B	3.1 B	3.5 B	--	--	3.6 B
Arsenic	360	4.1 B - 18.3	ND - 4 B	--	--	--	--	--
Barium	NC	250 - 631	52.4 B - 154 B	68 B	37.7 B	25.4 B - 33.7 B	27.2 B - 56 B	33.4 B
Cadmium	3	1.1 B - 1.7 B	--	--	--	--	--	--
Calcium	NC	18,800 - 40,600	16,300 - 21,800	23400	22600	20,700 - 21,500	22,200 - 23,500	23000
Chromium	106	69.7 - 253	ND - 39.6	1.5 B	--	1.4 B - 3.5 B	--	--
Cobalt	110	31.4 B - 32.8 B	ND - 6.7 B	1.4 B	--	--	--	--
Copper	13	95.4 - 3,960	2.8 B - 491	14.1 B	4.3 B	8 B - 14 B	4.9 B - 6.5 B	2.7 B
Iron	300	24,000 - 34,100 J	94.2 B - 7,240 J	1110 J	856 J	908 - 1,510	658 - 1,060 J	363 J
Lead	6	43.6 - 88	ND - 14.2	R	--	2 JB - 2.2 JB	--	R
Magnesium	NC	13,800 - 68,600	14,200 - 20,200	15,200	18,200	17,300 - 17,900	18,800 - 18,900	13,800
Manganese	NC	1,010 - 1,760	57.4 - 625	888	336	182 - 188	209 - 422	60.3
Mercury	0.2	ND - 0.22	--	--	--	--	--	--
Nickel	75.5	204 - 558	5.5 B - 136	15.7 B	8.9 B	4 B - 4.6 B	2.3 B - 10.6 B	3.5 B

TABLE 4-3
Summary of Detected Constituents
Surface Water Analytical Results
Page 2 of 2

	NYSDEC Water Quality Standards/ Guidance Values (Class C)	Wetlands (SW-7, SW-9)	Tributary (SW-6, SW-8, SW-10, SW-11)	Confluence of Tributary and Stream (SW-5)	Confluence of Pond and Stream (SW-4)	Pond (SW-2, SW-3)	Drainage Culvert (SW-1, SW-1DUP)	Upstream (SW-12)
Potassium	NC	2,790 JB - 5,980 J	1,510 B - 1,990 JB	2060 JB	2360 JB	2,080 B - 2,160 B	2,230 B - 2,300 JB	1970 B
Selenium	NC	3 B - 40.1	ND - 10.2	--	--	ND - 4.5 B	ND - 3.4 B	--
Sodium	NC	21,700 - 30,300	23,600 - 27,900	18800	19600	18,600 - 19,200	20,300 - 20,400	17600
Vanadium	190	25.7 B - 29.6 B	ND - 8.6 B	1.3 JB	--	ND - 1.6 B	--	--
Zinc	120	146 - 2,090 J	18.3 B - 232 J	28.1 J	17.8 B	16.7 B - 37	10.7 B - 21.8 B	27.3 J
Cyanide	22	18.7 - 858	ND - 220	--	--	--	ND - 39.6 J	--

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

R = Constituent value is rejected and deemed unusable.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

NC = No criteria available.

NA = Not analyzed/not available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-4
Surface Water Samples
Compounds Exceeding Surface Water Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Water Quality Standards Class C*	SW-13 MM-SW13-032904 03/29/2004	SW-14 MM-SW14-032904 03/29/2004	SW-15 MM-SW15-032904 03/29/2004	SW-16 MM-SW16-032904 03/29/2004	SW-17 MM-SW17-032904 03/29/2004	SW-18 MM-SW18-032904 03/29/2004
Constituent							
Aluminum	100	[368]	[690]	[328]	[316]	[282]	[342]
Arsenic	150	4.8U	4.8U	4.8U	4.8U	4.8U	4.8U
Barium	NC	53.5J	79J	105J	99.7J	82.2J	132J
Calcium	NC	32700	35000	31000	29100	25000	31100
Chromium	132	1.2U	1.3J	1.2U	1.2U	2.2J	1.2U
Cobalt	5	2.4U	2.4U	2.4U	2.4U	2.4U	2.4U
Copper	16	0.74U	[57.6]J	0.74U	0.74U	0.74UJ	0.74U
Iron	300	[327]J	[1670]J	212J	205J	107J	[583]J
Lead	8	1.8UJ	1.8UJ	1.8UJ	1.8UJ	1.8UJ	1.8UJ
Magnesium	NC	20200	21400	30100	28200	23500	55200
Manganese	NC	73.8	234	118	112	35.2	134
Nickel	94	5.5U	24.8J	20.9J	19.9J	12.5J	16J
Potassium	NC	2940J	3130J	2990J	2700J	2360J	5140J
Selenium	4.6	5.2U	5.2U	5.2U	5.2U	5.2U	5.2U
Sodium	NC	43000J	38300J	67000J	62100J	61500J	38900J
Thallium	8	5.8U	5.8U	5.8U	5.8U	5.8U	5.8U
Vanadium	14	1.9U	1.9U	1.9U	1.9U	1.9U	1.9U
Zinc	150	8.1U	23.7J	11.5J	14.4J	13J	10.6J

Notes:

All results are in ug/l.

U - Non-detect

J - Estimated

Shading and [] - Indicates exceedance of criteria.

* Criteria is based on a Class C stream class which is the most stringent for surface water.

Table 4-4
Surface Water Samples
Compounds Exceeding Surface Water Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Water Quality Standards Class C*	SW-18 MM-SW18D-032904 Duplicate of MM-SW18-032904	SW-19 MM-SW19-032904 03/29/2004	SW-20 MM-SW20-032904 03/29/2004	SW-21 MM-SW21-032904 03/29/2004	SW-22 MM-SW22-032904 03/29/2004
Constituent						
Aluminum	100	[383]J	[728]J	[358]J	[725]J	[381]J
Arsenic	150	4.8U	4.8U	4.8U	4.8U	6.9J
Barium	NC	141J	119J	74.6J	185J	33.4J
Calcium	NC	32100	32900	30500	32400	10600
Chromium	132	1.2U	2.6J	1.2U	3.4J	26.7
Cobalt	5	2.4U	2.4U	2.4U	2.8J	[5.1]J
Copper	16	0.74UJ	[22.8]J	0.74UJ	5.5J	[772]J
Iron	300	[903]J	[2180]J	[368]J	[2790]J	[2020]J
Lead	8	1.8UJ	1.8UJ	1.8UJ	3.5J	1.8UJ
Magnesium	NC	56500	27000	25800	49700	5680
Manganese	NC	0.2R	0.2R	0.2R	0.2R	0.2R
Nickel	94	19.4J	22.4J	7J	29.9J	[16.1]
Potassium	NC	5400J	3910J	3140J	5000J	828J
Selenium	4.6	5.2U	5.2U	5.2U	5.2U	[8.7]J
Sodium	NC	40500J	48400J	48500J	36100J	12100J
Thallium	8	5.8U	5.8U	5.8U	6.9J	5.8U
Vanadium	14	1.9U	2J	1.9U	2J	1.9U
Zinc	150	16.8J	57.3J	9.3J	27.4J	[343]J

Notes:

All results are in ug/l.

U - Non-detect

J - Estimated

Shading and [] - Indicates exceedance of criteria.

* - Criteria is based on a Class C stream class which is the most stringent for surface water.

TABLE 4-5
Summary of Detected Constituents
Sediment Analytical Results
Page 1 of 3

	NYSDEC Sediment Criteria ug/gOC	Normalized Sediment Criteria ug/kg	Wetlands (SD-7, SD-9)	Tributary (SD-6, SD-8, SD-10, SD-11)	Confluence of Tributary and Stream (SD-5)	Confluence of Pond and Stream (SD-4)	Pond (SD-2, SD-3)	Drainage Culvert (SD-1, SD-1DUP)	Upstream (SD-12)
Volatile Organics (ug/kg)									
Chloromethane	NC	NC	ND - 7 J	--	--	--	--	--	--
Vinyl Chloride	0.07 HH	5.98	ND - 25 J	--	--	--	--	--	--
Acetone	NC	NC	ND - 530 J	ND - 150 J	770 J	340 J	--	--	--
Carbon Disulfide	NC	NC	--	--	--	12 J	--	--	--
2-Butanone	NC	NC	39 J - 160 J	ND - 36 J	260 J	95 J	11 J	21 - 74	--
Trichloroethene	2 HH	171	ND - 22 J	--	20 J	--	--	--	--
4-Methyl-2-Pentanone	NC	NC	--	ND - 5 J	--	--	12 J	--	--
2-Hexanone	NC	NC	--	ND - 10 J	--	--	18 J	--	--
Tetrachloroethene	0.8 HH	68.3	--	ND - 4 J	--	--	--	--	--
Toluene	NC	NC	ND - 12 J	--	--	--	--	--	--
Semi-Volatile Organics (ug/kg)									
Hexachloroethane	NC	NC	--	ND - 960	--	--	--	--	--
Naphthalene	NC	NC	--	--	--	--	--	ND - 42 J	--
4-Chloro-3-methylphenol	0.6 CTY	51.2	--	--	--	--	ND - 160 J	--	--
2-Methylnaphthalene	NC	NC	--	--	--	--	--	ND - 38 J	--
Acenaphthylene	NC	NC	--	ND - 19 J	--	--	--	ND - 180 J	--
Acenaphthene	140 CT	11,951	--	ND - 53 J	--	--	ND - 88 J	ND - 140 J	--
Dibenzofuran	NC	NC	--	ND - 29 J	--	--	--	ND - 220 J	--
Fluorene	NC	NC	--	ND - 74 J	--	--	--	ND - 540	--
Phenanthrene	120 CT	10,243	250 J - 350 J	35 J - 950 J	270 J	--	--	ND - 2,700	--
Anthracene	NC	NC	37 J - 45 J	ND - 130 J	35 J	--	--	ND - 700	--
Carbazole	NC	NC	--	ND - 120 J	--	--	--	ND - 340 J	--
Di-n-butylphthalate	NC	NC	--	ND - 97 J	92 J	85 J	--	ND - 170 J	--
Fluoranthene	1,020 CT	87,069	590 J - 650 J	71 J - 1,400 J	490 J	280 J	--	270 J - 2,400	--
Pyrene	NC	NC	640 J - 710 J	72 J - 1,500 J	390 J	220 J	ND - 180 J	220 J - 2,300	--
Butylbenzylphthalate	NC	NC	--	--	--	--	ND - 1,000 J	--	--
Benzo(a)anthracene	1.3 HH	111	260 J - 300 J	31 J - 710 J	180 J	--	--	ND - 1,200	--
Chrysene	1.3 HH	111	370 J - 410 J	46 J - 1,000 J	300 J	--	--	ND - 1,300	--

TABLE 4-5
Summary of Detected Constituents
Sediment Analytical Results
Page 2 of 3

	NYSDEC Sediment Criteria ug/gOC	Normalized Sediment Criteria ug/kg	Wetlands (SD-7, SD-9)	Tributary (SD-6, SD-8, SD-10, SD-11)	Confluence of Tributary and Stream (SD-5)	Confluence of Pond and Stream (SD-4)	Pond (SD-2, SD-3)	Drainage Culvert (SD-1, SD-1DUP)	Upstream (SD-12)
bis(2-Ethylhexyl)phthalate	199.5 CT	17,030	--	ND - 140 J	250 J	210 J	--	ND - 300 J	--
Benzo(b)fluoranthene	1.3 HH	111	320 J - 360 J	32 J - 820 J	260 J	150 J	--	ND - 840	--
Benzo(k)fluoranthene	1.3 HH	111	300 J - 320 J	38 J - 780 J	210 J	150 J	--	ND - 950	--
Benzo(a)pyrene	1.3 HH	111	300 J - 320 J	ND - 810 J	180 J	120 J	ND - 58 J	230 J - 1,000	--
Indeno(1,2,3-cd)pyrene	1.3 HH	111	150 J - 290 J	ND - 87 J	--	--	--	ND - 110 J	--
Benzo(g,h,i)perylene	NC	NC	120 J - 250 J	ND - 51 J	--	--	--	ND - 55 J	--
Pesticides/PCBs (ug/kg)									
alpha-Chlordane	0.001 HH	0.09	NA	3.5 JP	NA	--	NA	--	NA
gamma-Chlordane	0.001 HH	0.09	NA	3.4	NA	--	NA	--	NA
	NYSDEC Sediment Criteria Severe Effect Level mg/kg								
Inorganics (mg/kg)									
Aluminum	NC		12,700 J - 14,900 J	4,970 - 34,090	19,800 J	10,600 J	7,770 J - 9,900	10,100 J - 11,700 J	2920
Arsenic	33		5.8 JB - 16.9 J	1.1 B - 19.3 J	7 J	9.1 J	3 B - 4.4 JB	3.2 JB - 10.6 J	--
Barium	NC		142 J - 604 J	32.6 B - 460 J	364 J	256 J	135 - 261 J	132 J - 289 J	33.8 B
Beryllium	NC		--	ND - 0.6 JB	0.62 JB	--	--	--	--
Cadmium	9		1 JB - 1.8 JB	0.31 B - 1.4 JB	1.1 JB	1 JB	0.78 J - 1.1 JB	1 JB - 1.3 JB	--
Calcium	NC		4,020 J - 11,200 J	2,590 - 13,000	7,760 J	9,530 J	4,490 J - 4,600	7,560 J - 11,500 J	882 B
Chromium	110		144 J	11.4 - 34	R	R	43 - 106 J	78.1 J	R
Cobalt	NC		20.4 J - 41.7 J	4.9 B - 24.7 JB	22.2 JB	24.6 JB	14.2 B - 37.3 J	31.9 JB - 35.6 J	4.6 B
Copper	110		129 J - 2,080 J	12.3 - 2,330 J	690 J	603 J	162 - 398 J	374 J - 493 J	4.4 B
Iron	40,000 (4%)		23,600 J - 38,600 J	9,820 - 20,200 J	28,000 J	19,500 J	2,160 - 27,000 J	21,100 J - 34,200 J	7,320
Lead	110		62.9 J - 63.2 J	3.9 - 48.2 J	46.2 J	29.3 J	15.4 J - 19.4	16.6 J - 29.2 J	3
Magnesium	NC		7,120 J - 9,420 J	3,950 - 7,830 J	7,000 J	8,670 J	6,160 - 21,800 J	10,700 J - 23,400 J	2,130
Manganese	1,100		220 J	841 J	321 J	167 J	R	154 J	87
Nickel	50		264 J - 494 J	26.9 - 835 J	231 J	234 J	180 - 212 J	166 J - 284 J	17.3
Potassium	NC		831 JB - 1,040 JB	413 B - 1,880 J	1,400 JB	894 JB	668 JB - 976 B	906 JB - 1,240 JB	207 B

TABLE 4-5
Summary of Detected Constituents
Sediment Analytical Results
Page 3 of 3

	NYSDEC Sediment Criteria Severe Effect Level mg/kg	Wetlands (SD-7, SD-9)	Tributary (SD-6, SD-8, SD-10, SD-11)	Confluence of Tributary and Stream (SD-5)	Confluence of Pond and Stream (SD-4)	Pond (SD-2, SD-3)	Drainage Culvert (SD-1, SD-1DUP)	Upstream (SD-12)
Selenium	NC	9.6 J - 46 J	ND - 68.2 J	19.2 J	14 J	4.8 J - 8.4	3.2 J - 14.6 J	--
Silver	2.2	ND - 0.66 JB	ND - 0.72 JB	0.66 JB	1.3 JB	ND - 0.58 JB	ND - 1.4 JB	0.26 B
Sodium	NC	311 JB - 454 JB	92.7 B - 586 JB	546 JB	343 JB	193 B - 324 JB	228 JB - 384 JB	59.8 B
Vanadium	NC	30.6 J - 49.5 J	8.1 B - 36.2 J	41.6 J	39.8 JB	25.4 - 26.9 J	23.5 J - 44.1 JB	5.8 B
Zinc	270	226 J - 1,890 J	36.8 - 938 J	441 J	209 J	133 J - 155	142 J - 180 J	29.3 J
Cyanide	NC	ND - 519 J	ND - 52.4 J	--	--	ND - 3.33 J	ND - 45.3 J	--

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

R = Constituent value rejected and deemed unusable.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

NA = Not analyzed/not available.

NC = No criteria available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=40,000 mg/kg	SD-13 MM-SD13-033004 03/30/2004 0-6 in. bgs	Sample Specific Criteria TOC=60,000 mg/kg	SD-14 MM-SD14-033004 03/30/2004 0-6 in. bgs	Sample Specific Criteria TOC=40,000 mg/kg	SD-15 MM-SD15-033004 03/30/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	39440	29UJ	59160	46UJ	39440	31UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	52	18UJ	78	29UJ	52	[470]J
Benzo(a)pyrene	(ug/kg)	1.3 *	52	21UJ	78	34UJ	52	[660]J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	52	65UJ	78	100UJ	52	[1200]J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	53UJ	NC	85UJ	NC	220J
Benzo(k)fluoranthene	(ug/kg)	1.3 *	52	42UJ	78	66UJ	52	[600]J
Chrysene	(ug/kg)	1.3 *	52	39UJ	78	62UJ	52	[650]J
Fluoranthene	(ug/kg)	1020 *	40800	17UJ	61200	27UJ	40800	1400J
Fluorene	(ug/kg)	73 *	2920	35UJ	4380	55UJ	2920	37UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	52	29UJ	78	47UJ	52	32UJ
Phenanthrene	(ug/kg)	120 *	4800	27UJ	7200	44UJ	4800	590J
Pyrene	(ug/kg)	8775 *	351000	22UJ	526500	35UJ	351000	1300J

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading and [] - Indicates exceedance of criteria.

* Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=18,000 mg/kg	SD-16 MM-SD16-033004 03/30/2004 0-6 in. bgs	Sample Specific Criteria TOC=6,100 mg/kg	SD-17 MM-SD17-033104 03/31/2004 0-6 in. bgs	Sample Specific Criteria TOC=76,000 mg/kg	SD-18 MM-SD18-033104 03/31/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	17748	17UJ	6014.6	200J	74936	37UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	23.4	[140]J	7.93	[470]	98.8	[160]J
Benzo(a)pyrene	(ug/kg)	1.3 *	23.4	[190]J	7.93	[430]J	98.8	[220]J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	23.4	[260]J	7.93	[670]J	98.8	[260]J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	32UJ	NC	150J	NC	68UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	23.4	[190]J	7.93	[380]J	98.8	[220]J
Chrysene	(ug/kg)	1.3 *	23.4	[190]J	7.93	[490]	98.8	[130]J
Fluoranthene	(ug/kg)	1020 *	18360	410J	6222	1300	77520	410J
Fluorene	(ug/kg)	73 *	1314	21UJ	445.3	70J	5548	44UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	23.4	18UJ	7.93	[48]J	98.8	38UJ
Phenanthrene	(ug/kg)	120 *	2160	190J	732	[900]	9120	170J
Pyrene	(ug/kg)	8775 *	157950	380J	53527.5	1000	666900	380J

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading [] - Indicates exceedance of criteria.

* Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=60,000 mg/kg	SD-18 MM-SD18D-033104 Duplicate of MM-SD18-033104	Sample Specific Criteria TOC=89,000 mg/kg	SD-19A MM-SD19A-033104 03/31/2004 0-6 in. bgs	Sample Specific Criteria TOC=100,000 mg/kg	SD-20 MM-SD20-033104 03/31/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	59160	41UJ	87754	52UJ	98600	87UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	78	26UJ	115.7	33UJ	130	55UJ
Benzo(a)pyrene	(ug/kg)	1.3 *	78	30UJ	115.7	38UJ	130	63UJ
Benzo(b)fluoranthene	(ug/kg)	1.3 *	78	92UJ	115.7	120UJ	130	190UJ
Benzo(ghi)perylene	(ug/kg)	NC *	NC	75UJ	NC	95UJ	NC	160UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	78	59UJ	115.7	74UJ	130	120UJ
Chrysene	(ug/kg)	1.3 *	78	55UJ	115.7	69UJ	130	120UJ
Fluoranthene	(ug/kg)	1020 *	61200	180J	90780	250J	102000	51UJ
Fluorene	(ug/kg)	73 *	4380	49UJ	6497	62UJ	7300	100UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	78	42UJ	115.7	53UJ	130	88UJ
Phenanthrene	(ug/kg)	120 *	7200	39UJ	10680	49UJ	12000	82UJ
Pyrene	(ug/kg)	8775 *	526500	31UJ	780975	220J	877500	65UJ

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading and [] - Indicates exceedance of criteria.

* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=49,000 mg/kg	SD-21 MM-SD21-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=12,000 mg/kg	SD-22 MM-SD22-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=10,000 mg/kg	SD-23 MM-SD23-040304 04/03/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	48314	86UJ	11832	87UJ	9860	66UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	63.7	55UJ	15.6	55UJ	13	360J
Benzo(a)pyrene	(ug/kg)	1.3 *	63.7	62UJ	15.6	63UJ	13	410J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	63.7	190UJ	15.6	190UJ	13	680J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	160UJ	NC	160UJ	NC	120UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	63.7	120UJ	15.6	120UJ	13	94UJ
Chrysene	(ug/kg)	1.3 *	63.7	110UJ	15.6	120UJ	13	510J
Fluoranthene	(ug/kg)	1020 *	49980	50UJ	12240	51UJ	10200	1000J
Fluorene	(ug/kg)	73 *	3577	100UJ	876	100UJ	730	78UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	63.7	87UJ	15.6	88UJ	13	66UJ
Phenanthrene	(ug/kg)	120 *	5880	81UJ	1440	81UJ	1200	450J
Pyrene	(ug/kg)	8775 *	429975	64UJ	105300	65UJ	87750	790J

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading [] - Indicates exceedance of criteria.

* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=140,000 mg/kg	SD-24 MM-SD24-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=100,000 mg/kg	SD-25 MM-SD25-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=100,000 mg/kg	SD-26 MM-SD26-040304 04/03/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	138040	R	98600	13UJ	98600	14UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	182	R	130	8.3UJ	130	100J
Benzo(a)pyrene	(ug/kg)	1.3 *	182	R	130	9.5UJ	130	120J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	182	R	130	76J	130	180J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	R	NC	24UJ	NC	26UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	182	R	130	19UJ	130	85J
Chrysene	(ug/kg)	1.3 *	182	R	130	71J	130	150J
Fluoranthene	(ug/kg)	1020 *	142800	R	102000	160J	102000	280J
Fluorene	(ug/kg)	73 *	10220	R	7300	16UJ	7300	17UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	182	R	130	13UJ	130	14UJ
Phenanthrene	(ug/kg)	120 *	16800	R	12000	80J	12000	130J
Pyrene	(ug/kg)	8775 *	1228500	R	877500	120J	877500	220J

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading and [] - Indicates exceedance of criteria.

* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6B
Sediment Samples
Inorganic Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	New York State DEC Sediment Criteria	SD-13 MM-SD13-033004 03/30/2004 0-6 in. bgs	SD-14 MM-SD14-033004 03/30/2004 0-6 in. bgs	SD-15 MM-SD15-033004 03/30/2004 0-6 in. bgs	SD-16 MM-SD16-033004 03/30/2004 0-6 in. bgs	SD-17 MM-SD17-033104 03/31/2004 0-6 in. bgs	SD-18 MM-SD18-033104 03/31/2004 0-6 in. bgs
Constituent								
Aluminum	(mg/kg)	NC	9920J	13800J	10100J	9080J	4080	12700J
Arsenic	(mg/kg)	33	2.3J	8.3J	8.3J	3.7J	1.5	12J
Barium	(mg/kg)	NC	229J	334J	266J	154J	47.5	409J
Beryllium	(mg/kg)	NC	0.86J	1.2J	0.82J	0.55J	0.28J	0.98J
Calcium	(mg/kg)	NC	4940J	13400J	7130J	7190J	16200	13300J
Chromium	(mg/kg)	110	31.1J	49.1J	158J	43.4J	16.4J	116J
Cobalt	(mg/kg)	NC	14.4J	22.5J	16.6J	12.8J	5.4J	36.1J
Copper	(mg/kg)	110	24.4J	672J	1040J	107J	9.9	327J
Iron	(mg/kg)	40000	11500J	13600J	10900J	12400J	6590	14400J
Lead	(mg/kg)	110	23.6J	39.5J	32.2J	22.9J	6.7	88.7J
Magnesium	(mg/kg)	NC	4400J	6310J	5280J	6880J	11900	9190J
Manganese	(mg/kg)	1100	391J	598J	958J	313J	337	241J
Nickel	(mg/kg)	50	336J	300J	332J	119J	35.6	430J
Potassium	(mg/kg)	NC	444J	726J	585J	833J	560J	584J
Selenium	(mg/kg)	NC	2.1J	12J	18.2J	2J	0.42U	9.9J
Silver	(mg/kg)	2.2	0.39UJ	0.6UJ	0.42UJ	0.24UJ	0.14U	0.49UJ
Sodium	(mg/kg)	NC	281J	770J	766J	348J	127J	276J
Thallium	(mg/kg)	NC	1.2UJ	1.9UJ	1.3UJ	0.74UJ	0.44UJ	1.5UJ
Vanadium	(mg/kg)	NC	22.3J	31.2J	20.6J	22.2J	9.3	43.4J
Zinc	(mg/kg)	270	106J	146J	325J	139J	37.3	239J
Mercury	(mg/kg)	1.3	0.09J	0.12J	0.15J	0.06J	0.01J	0.17J
TOC	(mg/kg)	NC	40000J	60000J	40000J	18000J	6100	76000J
AVS/SEM	(ratio)		<1.0UJ	>1.0J	>1.0J	>1.0J	>1.0	<1.0UJ

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading and [] - Indicates exceedance of criteria.

Table 4-6B
Sediment Samples
Inorganic Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	New York State DEC Sediment Criteria	SD-18 MM-SD18D-033104 Duplicate of MM-SD18-033104	SD-19A MM-SD19A-033104 03/31/2004 0-6 in. bgs	SD-20 MM-SD20-033104 03/31/2004 0-6 in. bgs	SD-21 MM-SD21-040304 04/03/2004 0-6 in. bgs	SD-22 MM-SD22-040304 04/03/2004 0-6 in. bgs	SD-23 MM-SD23-040304 04/03/2004 0-6 in. bgs
Constituent								
Aluminum	(mg/kg)	NC	12900J	11500J	11500J	15800J	18000J	12000J
Arsenic	(mg/kg)	33	7.7J	12.2J	4.1J	2.7UJ	2.7UJ	2UJ
Barium	(mg/kg)	NC	506J	418J	283J	374J	391J	278J
Beryllium	(mg/kg)	NC	1.1J	1.3J	1.6J	0.99J	1.1J	0.74J
Calcium	(mg/kg)	NC	14600J	16400J	10700J	13600J	10600J	11600J
Chromium	(mg/kg)	110	139J	133J	62.7J	60.5J	78.3J	73.7J
Cobalt	(mg/kg)	NC	35.7J	58.8J	21.3J	34.7J	39.8J	32.4J
Copper	(mg/kg)	110	230J	281J	271J	408J	415J	194J
Iron	(mg/kg)	40000	19600J	17400J	18200J	30100J	35300J	26600J
Lead	(mg/kg)	110	76.4J	91.5J	38.9J	112J	53.9J	48.7J
Magnesium	(mg/kg)	NC	10300J	11000J	7400J	8620J	10600J	12400J
Manganese	(mg/kg)	1100	456J	302J	482J	735J	693J	525J
Nickel	(mg/kg)	50	364J	365J	200J	180J	170J	155J
Potassium	(mg/kg)	NC	618J	440J	747J	1460J	1970J	1440J
Selenium	(mg/kg)	NC	8.8J	10.1J	10.8J	12.4J	7.7J	6.7J
Silver	(mg/kg)	2.2	0.55UJ	0.69UJ	1.1UJ	1.2UJ	1.2UJ	0.91UJ
Sodium	(mg/kg)	NC	638J	620J	401J	427UJ	471J	490J
Thallium	(mg/kg)	NC	3.4J	2.2UJ	3.6UJ	3.8UJ	3.7UJ	2.8UJ
Vanadium	(mg/kg)	NC	42.2J	61J	28.5J	38J	44.7J	31J
Zinc	(mg/kg)	270	259J	176J	253J	191J	195J	270J
Mercury	(mg/kg)	1.3	0.16J	0.14J	0.15J	0.22J	0.25J	0.14J
TOC	(mg/kg)	NC	60000J	89000J	100000J	49000J	12000J	10000J
AVS/SEM	(ratio)		>1.0J	>1.0J	<1.0UJ	>1.0J	<1.0UJ	<1.0UJ

Notes:

U - Non-detect

J - Estir

R - Reje

Shading and [] - Indicates exceedance of criteria.

Table 4-6B
Sediment Samples
Inorganic Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	New York State DEC Sediment Criteria	SD-24 MM-SD24-040304 04/03/2004 0-6 in. bgs	SD-25 MM-SD25-040304 04/03/2004 0-6 in. bgs	SD-26 MM-SD26-040304 04/03/2004 0-6 in. bgs
Constituent					
Aluminum	(mg/kg)	NC	14400J	3310	6310
Arsenic	(mg/kg)	33	2.7UJ	0.4U	1.4J
Barium	(mg/kg)	NC	331J	65.3J	209J
Beryllium	(mg/kg)	NC	1J	0.17J	0.28J
Calcium	(mg/kg)	NC	10400J	2170	2580
Chromium	(mg/kg)	110	76.3J	81.2	75.4
Cobalt	(mg/kg)	NC	39.7J	26.7	21.5
Copper	(mg/kg)	110	218J	137J	130J
Iron	(mg/kg)	40000	34700J	17500	16300
Lead	(mg/kg)	110	42.2J	10.1J	18.5J
Magnesium	(mg/kg)	NC	10800J	18600	12400
Manganese	(mg/kg)	1100	338J	301	549
Nickel	(mg/kg)	50	161J	149	121
Potassium	(mg/kg)	NC	1500J	324J	471J
Selenium	(mg/kg)	NC	4.7J	0.53U	0.56U
Silver	(mg/kg)	2.2	1.2UJ	0.19J	0.19UJ
Sodium	(mg/kg)	NC	423UJ	119J	67.1U
Thallium	(mg/kg)	NC	3.8UJ	0.55UJ	0.6UJ
Vanadium	(mg/kg)	NC	42J	14.5J	21.8J
Zinc	(mg/kg)	270	170J	82.8	68.8
Mercury	(mg/kg)	1.3	0.2J	0.02	0.04
TOC	(mg/kg)	NC	140000J	100000	100000
AVS/SEM	(ratio)		<1.0UJ	>1.0	>1.0

Notes:

U - Non-detect

J - Estimated

R - Rejected

Shading and [] - Indicates exceedance of criteria.

TABLE 4-7
Summary of Detected Constituents
Surface Soil Analytical Results
Page 1 of 2

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Downgradient (SS-1, SS-2, SS-3)	Background (SS-4, SS-5)
Semi-Volatile Organics (ug/kg)				
2-Methylphenol	100	NA	--	ND - 39 J
Phenanthrene	50,000	NA	11 J - 45 J	21 J - 55 J
Anthracene	50,000	NA	ND - 8 J	--
Di-n-butylphthalate	8,100	NA	ND - 610 JB	--
Fluoranthene	50,000	NA	19 J - 57 J	27 J - 97 J
Pyrene	50,000	NA	22 J - 86 J	66 J - 100 J
Butylbenzylphthalate	50,000	NA	ND - 370 J	--
Benzo(a)anthracene	224	NA	ND - 23 J	13 J - 39 J
Chrysene	400	NA	ND - 28 J	19 J - 62 J
bis(2-Ethylhexyl)phthalate	50,000	NA	ND - 4,900 B	--
Benzo(b)fluoranthene	1,100	NA	ND - 21 J	ND - 49 J
Benzo(k)fluoranthene	1,100	NA	ND - 26 J	ND - 48 J
Benzo(a)pyrene	61	NA	ND - 97 J	ND - 29 J
Indeno(1,2,3-cd)pyrene	3,200	NA	ND - 81 J	ND - 41 J
Benzo(g,h,i)perylene	50,000	NA	ND - 46 J	--
Semi-Volatile TICs	NA	NA	8,550 JN - 28,330 JN	14,090 JN - 15,990 JN
Pesticides/PCBs (ug/kg)				
4,4'-DDE	2,100	NA	5.3 - 10	ND - 8
4,4'-DDD	2,900	NA	ND - 7.1 JPN	--
4,4'-DDT	2,100	NA	5 JP - 6.6 JPN	4.3 - 8.9
Aroclor-1254	1,000	NA	ND - 62 J	--
Aroclor-1260	1,000	NA	ND - 46 J	--
Inorganics (mg/kg)				
Aluminum	SB	19,100	7,510 - 8,830	12,600 - 19,100
Arsenic	7.5 or SB	7.5	1.6 B - 2.5	2.9 - 3.1
Barium	300 or SB	300	42.6 B - 52	70 - 83.2
Beryllium	0.16 or SB	0.59	0.3 B - 0.35 B	0.54 B - 0.59 B

TABLE 4-7
Summary of Detected Constituents
Surface Soil Analytical Results
Page 2 of 2

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Downgradient (SS-1, SS-2, SS-3)	Background (SS-4, SS-5)
Calcium	SB	847	1,280 - 1,540	808 B - 847 B
Chromium	10 or SB	21.1	10.5 - 19	14.1 - 21.1
Cobalt	30 or SB	30	5.2 B - 7.3 B	7.6 B - 8.5 B
Copper	25 or SB	25	18 - 177 J	12.8 - 14.8
Iron	2,000 or SB	19,100	10,900 - 13,700	14,800 - 19,100
Lead	SB	18.1	8 - 10.8	12.2 - 18.1
Magnesium	SB	3,270	2,130 - 2,880	2,380 - 3,270
Manganese	SB	241	168 - 225	161 - 241
Nickel	13 or SB	18.8	10.2 - 15	16.2 - 18.8
Potassium	SB	475	526 B - 768 B	385 B - 475 B
Selenium	2 or SB	2	1 J - 1.3 J	1.2 J - 1.6 J
Sodium	SB	96.4	74.4 B - 93.1 B	72.3 B - 96.4 B
Vanadium	150 or SB	150	ND - 18.8	24.1 - 38.8
Zinc	20 or SB	41.1	41.5 J - 124	34.2 J - 41.1 J

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.

N = Presumptive evidence exists for the presence of the constituent.

B (organics) = Constituent also present in an associated blank sample.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

NA = Not analyzed/not available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-8
Surface Soil Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (in. bgs)	NYSDEC Recommended Soil Cleanup Criteria	SS-06 MM-SS06-073003 07/30/2003 0-2	SS-07 MM-SS07-072903 07/29/2003 0-2	SS-08 MM-SS08-072903 07/29/2003 0-2	SS-09 MM-SS09-073003 07/30/2003 0-2	SS-10 MM-SS10-073003 07/30/2003 0-2	SS-11 MM-SS11-072903 07/29/2003 0-2
Constituent							
Arsenic	7.5	5.5	[62.7]	3.5	[14.9]	[54.7]J	1.6
Barium	300	69.4	82.4	75.3	[407]	260J	48.2
Beryllium	0.59*	0.41J	0.3J	0.23J	[0.85]	0.53J	0.21J
Calcium	5060**	1220	3470	1890	[5470]	[7210]J	3310
Chromium	70.5**	27.4	[51.2]	14.2	[232]	[210]J	10.8
Cobalt	30	7.8	8	6.3J	13.2	[40.3]J	6.6
Copper	25	[54.5]	[370]	[62.7]	[1980]	[1120]J	[30.2]
Iron	21100**	[39900]	14800	11100	12900	[34800]J	11000
Lead	91.7**	[95.3]	[96.1]	37.6	44.8	[122]J	12.1
Magnesium	7830**	2470	6220	2200	2980	[8410]J	2440
Manganese	408**	392	393	134	267	[699]J	251
Nickel	87.5**	26.4	[483]	27.3	[335]	[1360]J	11.6
Potassium	496**	381J	[575]J	402J	[886]J	[1090]J	[655]J
Selenium	2	1.3J	[18.7]	0.82J	[28.9]	[49.5]J	0.4J
Sodium	96.4*	47.3U	[969]J	52.2U	[279]J	[517]J	92.8J
Zinc	50.7**	[109]J	[3830]J	[76.4]J	[869]J	[1050]J	[250]J
Mercury	0.15**	0.12J	0.09J	[0.52]J	0.15J	[0.21]J	0.03J

Notes:

All results are in mg/kg.

U - Non-detect

J - Estimated

R - Rejected

Shading & [] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background locations SS-4 and SS-5 as stated in the November 1998 RI/FS.

** - Criteria is based on the maximum site background concentration from background locations SS-13, SS-14, and SS-55 as stated in the July 2004 RI/FS.

Table 4-8
Surface Soil Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (in. bgs)	NYSDEC Recommended Soil Cleanup Criteria	SS-12 MM-SS12-072903 07/29/2003 0-2	SS-13 MM-SS13-072903 07/29/2003 0-2	SS-14 MM-SS14-072903 07/29/2003 0-2	SS-15 MM-SS15-072903 07/29/2003 0-2
Constituent					
Arsenic	7.5	1.7	2.6	4.3	3.7
Barium	300	71.6	76.1	139	80.9
Beryllium	0.59*	0.21J	0.59J	0.26J	0.29J
Calcium	5060**	1640	5060	2630	1690
Chromium	70.5**	10.6	19.5	15.4	70.5
Cobalt	30	5.9	5J	7.7	26.5
Copper	25	[136]	22.8	21.2	22.4
Iron	21100**	9830	17900	13700	21100
Lead	91.7**	20.8	67.4	91.7	39.2
Magnesium	7830**	2280	1910	2730	7830
Manganese	408**	214	95.4	408	335
Nickel	87.5**	11.1	17.8	17.3	87.5
Potassium	496**	[651]J	387J	496J	442J
Selenium	2	0.38U	0.5U	1.1J	0.63J
Sodium	96.4*	[122]J	60.3U	54.1U	53.4U
Zinc	50.7**	[160]J	19.8J	50.7J	44.4J
Mercury	0.15**	0.01R	0.14J	0.15J	0.13J

Notes:

All results are in mg/kg.

U - Non-detect

J - Estimated

R - Rejected

Shading & [] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background locations SS-4 and SS-5 as stated in the November 1998 RI/FS.

** - Criteria is based on the maximum site background concentration from background locations SS-13, SS-14, and SS-55 as stated in the July 2004 RI/FS.

TABLE 4-9
Summary of Detected Constituents
Subsurface Soil Analytical Results
Page 1 of 3

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Septic Tank/Leach Pit Soil Borings (SB-1 through SB-7)	Monitoring Well Soil Borings (MW-2 through MW-4)	Background Monitoring Well Soil Boring (MW-1)
Volatile Organics (ug/kg)					
Methylene Chloride	100	NA	ND - 8 J	ND - 4 JB	ND - 5 JB
Acetone	200	NA	--	5 JB - 7 JB	5 JB - 6 JB
2-Butanone	300	NA	--	ND - 4 J	--
Trichloroethene	700	NA	ND - 35	ND - 4 J	--
4-Methyl-2-Pentanone	1,000	NA	--	ND - 4 J	--
2-Hexanone	NC	NA	--	ND - 5 J	--
1,1,2,2-Tetrachloroethane	600	NA	--	ND - 3 J	--
Volatile TICs	NC	NA	21 JN - 200 JN	--	--
Semi-Volatile Organics (ug/kg)					
Diethylphthalate	7,100	NA	--	ND - 13 JB	--
Phenanthrene	50,000	NA	ND - 19 J	--	--
Anthracene	50,000	NA	ND - 4 J	--	--
Di-n-butylphthalate	8,100	NA	ND - 660 B	12 JB - 42 JB	22 JB - 31 JB
Fluoranthene	50,000	NA	ND - 17 J	--	--
Pyrene	50,000	NA	ND - 16 J	--	--
Butylbenzylphthalate	50,000	NA	ND - 43 J	--	--
bis(2-Ethylhexyl)phthalate	50,000	NA	--	12 JB - 100 JB	ND - 43 JB
Di-n-octylphthalate	50,000	NA	--	--	--
Benzo(a)pyrene	61	NA	--	ND - 18 J	--
Benzo(g,h,i)perylene	50,000	NA	--	ND - 160 J	--
Pesticides/PCBs (ug/kg)					
alpha-BHC	110	NA	--	0.05 JP	NA
Heptachlor	100	NA	--	0.19 JP	NA
Endosulfan I	900	NA	--	0.32 JP	NA
Dieldrin	44	NA	--	0.28 JP	NA
Endosulfan II	900	NA	--	0.15 JP	NA
4,4'-DDD	2,900	NA	--	0.98 JP	NA
4,4'-DDT	2,100	NA	--	0.92 JP	NA

TABLE 4-9
Summary of Detected Constituents
Subsurface Soil Analytical Results
Page 2 of 3

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Septic Tank/Leach Pit Soil Borings (SB-1 through SB-7)	Monitoring Well Soil Borings (MW-2 through MW-4)	Background Monitoring Well Soil Boring (MW-1)
alpha-Chlordane	NC	NA	ND - 2 JPN	0.27 JP	NA
Aroclor-1254	10,000	NA	ND - 280 JP	--	NA
Inorganics (mg/kg)					
Aluminum	SB	5,040	4,554.3 - 21,295	3,190 - 8,480	2,260 - 5,040
Arsenic	7.5 or SB	7.5	3.5 - 30.8 J	0.87 B - 20.4	ND - 1.6 B
Barium	300 or SB	300	34.1 B - 721	19.7 B - 434	74 - 81.9
Beryllium	0.16 or SB	0.32	ND - 0.43 B	ND - 0.4 B	0.24 B - 0.32 B
Calcium	SB	1,690	925 - 5,124.1	664 B - 5,110	1,560 - 1,690
Chromium	10 or SB	10	5.7 - 48.7	3.1 - 61.1	2.2 B - 6.8
Cobalt	30 or SB	30	3.2 B - 24.3 J	2.3 B - 20.8	3.2 B - 4.6 B
Copper	25 or SB	25	40.4 - 1,309	19.4 - 695	13.7 - 20.6
Iron	2,000 or SB	10,000	6,198.5 - 24,435	3,880 - 13,400	4,350 - 10,000
Lead	SB	3.7	2.9 - 12.9	1.1 - 5.2	2.2 - 3.7
Magnesium	SB	2,100	1,408.3 - 11,389	770 B - 5,480	1,030 B - 2,100
Manganese	SB	250	140 J - 282 J	121 - 304	171 - 250
Mercury	0.1	0.1	ND - 0.12	ND - 0.25	--
Nickel	13 or SB	15	11.9 J - 108 J	7.4 B - 39	6.7 B - 15.2
Potassium	SB	864	398 B - 6,993.6 J	267 B - 3,190	487 B - 864 B
Selenium	2 or SB	2	ND - 11.7	ND - 8.6	ND - 0.9 B
Sodium	SB	86.8	98.7 B - 485 B	52.8 B - 548 B	50 B - 86.8 B
Thallium	SB	DL	ND - 1.8 J	--	--
Vanadium	150 or SB	150	8.2 - 69	4.5 B - 37.3	7.2 B - 11.6
Zinc	20 or SB	23.3	28.7 - 764	10.3 - 39.3	11.2 - 23.3
Cyanide	NC	NA	ND - 225	ND - 19.9	--

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

TABLE 4-9
Summary of Detected Constituents
Subsurface Soil Analytical Results
Page 3 of 3

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Septic Tank/Leach Pit Soil Borings (SB-1 through SB-7)	Monitoring Well Soil Borings (MW-2 through MW-4)	Background Monitoring Well Soil Boring (MW-1)
--	--	---	---	---	--

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.

E = Constituent value exceeded calibration range.

N = Presumptive evidence exists for the presence of the constituent.

B (organics) = Constituent also present in an associated blank sample.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

DL = Not to be detected above the detection limit for the applicable analytical method.

NC = No criteria available.

NA = Not analyzed/not available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

TABLE 4-10
Summary of Detected Constituents
Groundwater Analytical Results
Page 1 of 2

	NYSDEC Water Quality Standards/ Guidance Values (Class GA)	Downgradient (GW-2, GW-3, GW-4)	Background (GW-1)
Volatile Organics (ug/L)			
Trichloroethene	5	3.7 - 4,700	--
Tetrachloroethene	5	ND - 90 E	--
Semi-Volatile Organics (ug/L)			
bis(2-Ethylhexyl)phthalate	50	ND - 0.9 JB	--
Semi-Volatile TICs	NC	ND - 13 J	--
Pesticides/PCBs (ug/L)			
beta-BHC	ND	0.00022 JP - 0.11 P	0.00078 JP
delta-BHC	ND	ND - 0.0013 JPB	0.00088 JP
gamma-BHC (Lindane)	ND	ND - 0.009 J	--
Heptachlor	ND	ND - 0.0029 J	--
Heptachlor epoxide	ND	ND - 0.035 P	0.001 JP
Dieldrin	ND	ND - 0.0038 JP	0.00072 JP
Endrin	ND	0.003 JP - 0.019 JP	--
Endosulfan II	NC	ND - 0.0044 JP	--
4,4'-DDT	ND	0.0046 JP - 0.026 P	--
alpha-Chlordane	0.1	ND - 0.004 JP	--
gamma-Chlordane	0.1	ND - 0.0063 JP	--
Inorganics (ug/L)			
Aluminum	NC	965 - 7,400	51.1 B
Antimony	3	ND - 5.1 B	--
Arsenic	25	15.7 - 64.3	--
Barium	1,000	56.5 B - 204	89.5 B
Cadmium	10	ND - 1.5 B	1.4 B
Calcium	NC	16,500 - 28,100	10,700
Chromium	50	14.5 - 112	2.2 B
Cobalt	NC	1.4 B - 20.2 B	--
Copper	200	8.3 B - 148	1.7 B
Iron	300	1,420 - 18,900	122
Lead	25	1.3 B - 3.2	1.2 B

TABLE 4-10
Summary of Detected Constituents
Groundwater Analytical Results
Page 2 of 2

	NYSDEC Water Quality Standards/ Guidance Values (Class GA)	Downgradient (GW-2, GW-3, GW-4)	Background (GW-1)
Magnesium	35,000	2,140 B - 18,300	6,980
Manganese	300	56.6 - 1,600	5.9 B
Nickel	NC	7.9 B - 262	6.1 B
Potassium	NC	1,640 B - 8,250	1,210 B
Selenium	10	60.1 - 96.8	2.5 B
Sodium	20,000	7,950 - 57,600	27,700
Vanadium	NC	2.8 B - 37.3 B	--
Zinc	300	4 B - 516	7.8 B
Cyanide	100	14 - 416	--

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.

E = Constituent value exceeded calibration range.

N = Presumptive evidence exists for the presence of the constituent.

B (organics) = Constituent also present in an associated blank sample.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

ND (criteria) = Not to be detected above the detection limit for the applicable analytical method.

NC = No criteria available.

NA = Not analyzed/not available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-11
Groundwater Samples
Compounds Exceeding Groundwater Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Groundwater Quality Standards	MW-01 MM-GWMW01-100603 10/06/2003	MW-02 MM-GWMW02-100803 10/08/2003	MW-04 MM-GWMW04-100803 10/08/2003	MW-04D MM-GWMW04D-100803 10/08/2003	MW-04D MM-GWMW05D-100803 Duplicate of MM-GWMW04D-100803
Constituent						
Tetrachloroethene	5	0.70UJ	0.70U	[13]	[13]	[14]
Trichloroethene	5	0.72U	[9.4]	[910]D	[870]D	[870]D
cis-1,2-Dichloroethene	5	0.62U	0.62U	[7.7]	4.9J	[5.5]
Arsenic	25	4.0U	4.0U	[133]	6.9J	4.8J
Barium	1000	156J	294	[1140]	395	350
Beryllium	3	0.12J	0.10U	[5.6]	0.10U	0.13J
Chromium	50	17.8	11.4	[139]	2.5J	2.0J
Copper	200	8.4J	8.8J	[240]	3.6U	3.6U
Iron	300	[1540]	[346]	[37200]	[3810]	[3510]
Magnesium	35000	14800	[48900]	[38600]	[44300]	[39400]
Manganese	300	45.3	29.4	[6400]	[9500]	[8510]
Nickel	100	18.2J	88.1	[108]	15.8J	13.8J
Selenium	10	1.3U	[30.8]	[131]	[30.4]	[23.9]
Sodium	20000	12700J	[264000]J	[76900]J	[126000]J	[111000]J
Thallium	0.5	5.3U	5.3U	[10.5]	[8.6]J	[8.3]J
Cyanide	200	10U	10U	[555]	74J	27J
Arsenic - Dissolved	25	4.0U	NS	[46.8]	NS	NS
Iron - Dissolved	300	55.0J	NS	[14300]	NS	NS
Manganese - Dissolved	300	3.2J	NS	[5810]	NS	NS
Selenium - Dissolved	10	1.3U	NS	[71.1]	NS	NS
Sodium - Dissolved	20000	12900J	NS	[77800]J	NS	NS

Notes:

All results are in ug/l.

U - Non-detect

J - Estimated

D - Dilution

NS - Not Sampled

Shading & [] - Indicates exceedance
of criteria.

Table 4-11
Groundwater Samples
Compounds Exceeding Groundwater Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Groundwater Quality Standards	MW-05 MM-GWMW05-100603 10/06/2003	MW-07 MM-GWMW07-100703 10/07/2003	MW-08 MM-GWMW08-100703 10/07/2003
Constituent				
Tetrachloroethene	5	0.70UJ	0.70UJ	0.70UJ
Trichloroethene	5	0.72U	0.72U	0.72U
cis-1,2-Dichloroethene	5	0.62U	0.62U	0.62U
Arsenic	25	7.7J	4.0U	4.0U
Barium	1000	170J	266	68.9J
Beryllium	3	0.36J	0.10U	0.10J
Chromium	50	44.8	1.4U	20.6
Copper	200	15.8J	3.6U	52.8
Iron	300	[3300]	33.2J	[3180]
Magnesium	35000	14600	[74700]	[66200]
Manganese	300	[5660]	63.4	174
Nickel	100	29.5J	8.2J	89.9
Selenium	10	1.6J	1.3U	3.5J
Sodium	20000	[62900]J	[57200]	[36800]J
Thallium	0.5	[14.4]	5.3U	5.3U
Cyanide	200	10U	10U	10U
Arsenic - Dissolved	25	NS	NS	NS
Iron - Dissolved	300	NS	NS	NS
Manganese - Dissolved	300	NS	NS	NS
Selenium - Dissolved	10	NS	NS	NS
Sodium - Dissolved	20000	NS	NS	NS

Notes:

All results are in ug/l.

U - Non-detect

J - Estimated

D - Dilution

NS - Not Sampled

Shading & [] - Indicates exceedance
of criteria.

Table 4-12
Detected Volatile Organic Compounds for Groundwater Samples
February 2006
Magna Metals

		Site ID Sample ID Sample Date Units	MW-02 MM-GWMW02-022406 02/24/2006 µg/L	MW-03 MM-GWMW03-022406 02/24/2006 µg/L	MW-04 MM-GWMW04-022406 02/24/2006 µg/L	MW-04 MM-GWMW94-022406 Duplicate of MM-GWMW04-022406
CONSTITUENT	NY-GWQS					
cis-1,2-Dichloroethene	5*		--	--	2.2 J	2.2 J
Tetrachloroethene	5		--	2.6 J	7.5 J	8.2 J
Trichloroethene	5		--	17	270 D	260 D

Notes:

Bold values exceed criteria.

*Criteria provided for 1,2-dichloroethene (total) are the most conservative values for the cis- and trans- isomers.

-- Non-detect

D - From a diluted sample

J - Estimated

NY-GWQS - New York Ambient Water Quality Standards

References:

NYSDEC Values are from Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998; Errata Sheet for the June 1998 TOGS 1.1.1, January 1999; and April 2000 Addendum to the June 1998 TOGS 1.1.1, April 2000.

Table 4-12
Detected Volatile Organic Compounds for Groundwater Samples
February 2006
Magna Metals

Site ID Sample ID Sample Date Units		MW-06 MM-GWMW06-022306 02/23/2006 µg/L	MW-09 MM-GWMW09-022406 02/24/2006 µg/L	MW-10 MM-GWMW10-022406 02/24/2006 µg/L	MW-11 MM-GWMW11-022306 02/23/2006 µg/L
CONSTITUENT	NY-GWQS				
cis-1,2-Dichloroethene	5*	8.1	--	--	1.3 J
Tetrachloroethene	5	2.6 J	--	--	2.2 J
Trichloroethene	5	180 D	--	4.5 J	190

Notes:

Bold values exceed criteria.

*Criteria provided for 1,2-dichloroethene (total) are the most conservative values for the cis- and trans- isomers.

-- - Non-detect

D - From a diluted sample

J - Estimated

NY-GWQS - New York Ambient Water Quality Standards

References:

NYSDEC Values are from Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998; Errata Sheet for the June 1998 TOGS 1.1.1, January 1999; and April 2000 Addendum to the June 1998 TOGS 1.1.1, April 2000.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID Sample ID Sample Date Units	SV-01 MM-SV-01-010506 1/5/2006 $\mu\text{g}/\text{m}^3$	SV-02 MM-SV-02-010506 1/5/2006 $\mu\text{g}/\text{m}^3$	SV-03 MM-SV-03-010506 1/5/2006 $\mu\text{g}/\text{m}^3$	SV-04 MM-SV-04-010506 1/5/2006 $\mu\text{g}/\text{m}^3$	SV-05 MM-SV-05-010606 1/6/2006 $\mu\text{g}/\text{m}^3$
CONSTITUENT					
1,1,1-Trichloroethane	1.6	--	1.1	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	12	--	--
1,2,4-Trimethylbenzene	3.9	3.3	2	--	4.8
1,2-Dichloroethene	--	--	1.5	83	2.1
1,3,5-Trimethylbenzene	1.1	--	--	11	3.4
1,3-Butadiene	18 NJ	35 NJ	8.4	38 NJ	35
1,4-Dichlorobenzene	--	--	--	--	--
1,4-Dioxane	16	--	--	--	--
2,2,4-Trimethylpentane	--	17	--	32	1.5
2-Butanone	14	29	9.1	25	29
2-Hexanone	--	--	--	190	--
Acetone	69	110	36	--	97
Benzene	8	45	19	130	54
Carbon disulfide	25	110	4.7	18	28
Chloroform	2.4 NJ	--	--	--	--
Chloromethane	0.89	5.6	--	--	7.2
cis-1,2-Dichloroethene	--	--	1.5	44	2.1
Cyclohexane	6.5	21	0.96	83	2.8
Dichlorodifluoromethane	--	--	2.2	--	--
Ethylbenzene	2.3	6.9	4.3	650	10
Isopropyl alcohol	--	--	--	--	--
(m+p)xylene	6.1	11	6.1	1900	12
Methyl tert-butyl ether	--	--	--	--	--
n-Heptane	3.7	21	4.1	780	13
n-Hexane	7.4	32	6.3	150	17
o-Xylene	2.4	4.3	2.5	380	6.5
p-Ethyltoluene	3	3.3	2.3	22	4.7
Styrene	--	4	1.7	--	3.2
Tetrachloroethene	1.2	--	8.8	--	10

Notes:

-- Non-detect

NJ - Tentative in identification and estimated in value

Currently, there are no soil vapor criteria in New York State to compare results against.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID	SV-01	SV-02	SV-03	SV-04	SV-05
Sample ID	MM-SV-01-010506	MM-SV-02-010506	MM-SV-03-010506	MM-SV-04-010506	MM-SV-05-010606
Sample Date	1/5/2006	1/5/2006	1/5/2006	1/5/2006	1/6/2006
Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
CONSTITUENT					
Tetrahydrofuran	--	--	--	--	--
Toluene	9	26	14	210	38
trans-1,2-Dichloroethene	--	--	--	38	--
Trichloroethene	31	11	59	64	7
Trichlorofluoromethane	--	--	--	--	2
Vinyl chloride	--	1.2	--	22	0.92
Xylene (total)	8.3	16	8.3	2200	18

Notes:

-- Non-detect

NJ - Tentative in identification and estimated in value

Current there are no soil vapor criteria in New York State to compare results against.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID Sample ID Sample Date Units	SV-06 MM-SV-06-010606 1/6/2006 $\mu\text{g}/\text{m}^3$	SV-07 MM-SV-07-010606 1/6/2006 $\mu\text{g}/\text{m}^3$	SV-08 MM-SV-08-010606 1/6/2006 $\mu\text{g}/\text{m}^3$	SV-09 MM-SV-09-010506 1/5/2006 $\mu\text{g}/\text{m}^3$
CONSTITUENT				
1,1,1-Trichloroethane	0.93	28	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--
1,2,4-Trimethylbenzene	2.1	7.9	1.9	5.9
1,2-Dichloroethene	--	--	--	--
1,3,5-Trimethylbenzene	--	2.7	--	1.9
1,3-Butadiene	27	3.1 NJ	22 NJ	1.1 NJ
1,4-Dichlorobenzene	--	3	--	--
1,4-Dioxane	--	--	--	--
2,2,4-Trimethylpentane	--	3.2	--	2.2
2-Butanone	13	8	9.4	41
2-Hexanone	--	4.1	--	--
Acetone	59	29	38	52
Benzene	31	14	17	3.8
Carbon disulfide	5.3	3.1	5.3	3.7
Chloroform	1.3	--	--	--
Chloromethane	1.9	1.1	1	--
cis-1,2-Dichloroethene	--	--	--	--
Cyclohexane	1.5	9.3	1	1.4
Dichlorodifluoromethane	--	4	3.1	5.9
Ethylbenzene	4.3	7.4	2.6	3.9
Isopropyl alcohol	--	47	--	17
(m+p)xylene	7.4	23	4.8	12
Methyl tert-butyl ether	--	28	--	6.9
n-Heptane	4.5	9.8	3.9	3.8
n-Hexane	8.5	8.8	6.3	5.3
o-Xylene	2.5	7.8	1.6	--
p-Ethyltoluene	2	6.9	1.7	4.9
Styrene	1	2.1	0.85	--
Tetrachloroethene	130	4	8.1	--

Notes:

-- Non-detect

NJ - Tentative in identification and estimated in value

Currently, there are no soil vapor criteria in New York State to compare results against.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID	SV-06	SV-07	SV-08	SV-09
Sample ID	MM-SV-06-010606	MM-SV-07-010606	MM-SV-08-010606	MM-SV-09-010506
Sample Date	1/6/2006	1/6/2006	1/6/2006	1/5/2006
Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
CONSTITUENT				
Tetrahydrofuran	--	--	--	35
Toluene	25	22	12	15
trans-1,2-Dichloroethene	--	--	--	--
Trichloroethene	40	14	4.2	1.1
Trichlorofluoromethane	1.4	1.7	1.5	2.6
Vinyl chloride	--	--	--	--
Xylene (total)	9.6	30	6.1	11

Notes:

-- Non-detect

NJ - Tentative in identification and estimated in value

Cur there are no soil vapor criteria in New York State to compare results at t.

Table 4-14
Magna Metals
New York, NY
Soil Vapor Analytical Results

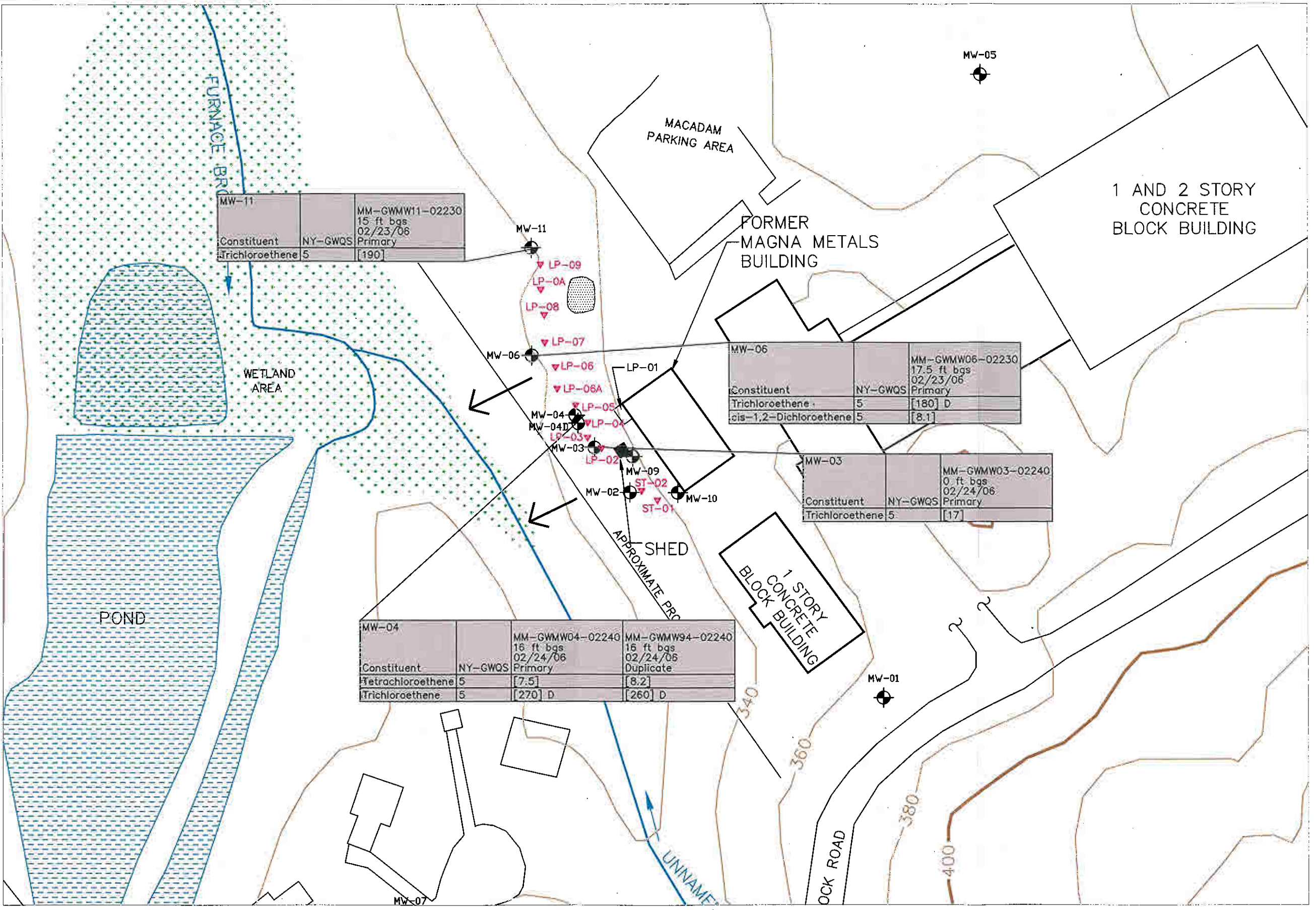
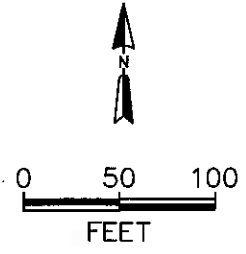
Client ID Date Sampled Lab Sample ID Units	NYSDOH Soil Vapor Intrusion Guidance Values	EPA BASE 90th percentile (ug/m3)	SV-13 DUP(S.S) 4/5/2007 17:06 JTPH11AD ug/m3	SV-11(S.S) 4/5/2007 16:34 JTPG31AD ug/m3	SV-12(S.S) 4/5/2007 16:38 JTPHF1AD ug/m3	SV-13(S.S) 4/5/2007 17:06 JTPH51AD ug/m3	SV-14(S.S) 4/5/2007 17:28 JTPH91AD ug/m3	SV-15(S.S) 4/5/2007 16:56 JTPJG1AD ug/m3
Compound	(ug/m3)							
1,1,1-Trichloroethane	100/1000	20.6	4.4 U	8.7 U	680 U	4.4 U	0.87 U	0.87 U
1,1,2,2-Tetrachloroethane		20.6	5.5 U	11 U	860 U	5.5 U	1.1 U	1.1 U
1,1,2-Trichloroethane		<1.5	4.4 U	8.7 U	680 U	4.4 U	0.87 U	0.87 U
1,1-Dichloroethane		<0.7	3.2 U	6.5 U	500 U	3.2 U	0.65 U	0.65 U
1,1-Dichloroethene		<1.4	3.2 U	6.3 U	490 U	3.2 U	0.63 U	0.63 U
1,2-Dibromoethane (EDB)		<1.5	6.1 U	12 U	960 U	6.1 U	1.2 U	1.2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane		<1.5	5.6 U	11 U	870 U	5.6 U	1.1 U	1.1 U
1,2-Dichloroethane		<0.9	3.2 U	6.5 U	500 U	3.2 U	0.65 U	0.65 U
1,2-Dichloropropane		<1.6	3.7 U	7.4 U	580 U	3.7 U	0.74 U	0.74 U
1,3,5-Trimethylbenzene		3.7	3.9 U	7.9 U	610 U	3.9 U	0.79 U	0.79 U
1,3-Butadiene		<3.0	3.5 U	7.1 U	550 U	3.5 U	0.71 U	0.71 U
2,2,4-Trimethylpentane		<4.8	9.3 U	19 U	1500 U	9.3 U	1.9 U	1.9 U
3-Chloropropene		250	2.5 U	5 U	390 U	2.5 U	0.5 U	0.5 U
4-Ethyltoluene		3.6	7.9 U	16 U	1200 U	7.9 U	1.6 U	1.6 U
Benzene		9.4	2.6 U	5.1 U	400 U	2.9	2.6	2.2
Bromodichloromethane		<6.8	5.4 U	11 U	840 U	5.4 U	1.1 U	1.1 U
Bromoform		<6.8	8.3 U	17 U	1300 U	8.3 U	1.7 U	1.7 U
Bromomethane		<1.7	3.1 U	6.2 U	480 U	3.1 U	0.62 U	0.62 U
Carbon tetrachloride	5/50/250	<1.3	2.5 U	5 U	390 U	2.5 U	0.5 U	0.53
Chloroethane		<1.1	2.1 U	4.2 U	330 U	2.1 U	0.42 U	0.42 U
Chloroform		1.1	3.9 U	7.8 U	610 U	3.9 U	0.78 U	0.78 U
cis-1,2-Dichloroethene		<1.9	3.2 U	6.3 U	11000	3.2 U	0.63 U	0.63 U
cis-1,3-Dichloropropene		<2.3	3.6 U	7.3 U	570 U	3.6 U	0.73 U	0.73 U
Cyclohexane		<2.3	87	170	1100 U	97	17	56
Dibromochloromethane		<2.3	6.8 U	14 U	1100 U	6.8 U	1.4 U	1.4 U
Dichlorodifluoromethane		16.5	4 U	7.9 U	620 U	4 U	2.3	3.2
Ethylbenzene		5.7	6.1	6.9 U	540 U	9.4	0.69 U	0.69 U
Methyl tert-butyl ether		22.2	14 U	29 U	2200 U	14 U	3.3	4.4
m-Xylene & p-Xylene		10	14	16	540 U	22	0.69 U	0.69 U
n-Heptane		<3.6	27	16 U	1300 U	31	1.6 U	1.6 U
n-Hexane		10.2	86	84	1400	88	18	26
o-Xylene		7.9	6.1	6.9 U	540 U	9.6	0.69 U	0.69 U
Tetrachloroethene	100/1000	15.9	5.5	11 U	850 U	7.8	1.1 U	1.1 U
Toluene		43	450	450	3300	600	6.2	19
trans-1,2-Dichloroethene		43	3.2 U	6.3 U	490 U	3.2 U	0.63 U	0.63 U
trans-1,3-Dichloropropene		<1.3	3.6 U	7.3 U	570 U	3.6 U	0.73 U	0.73 U
Trichloroethene	5/50/250	4.2	3.9	1200	66000	4.8	0.46	0.43 U
Trichlorofluoromethane		18.1	4.5 U	9 U	700 U	4.5 U	1.5	2.3
Vinyl bromide		3.5	3.5 U	7 U	550 U	3.5 U	0.7 U	0.7 U
Vinyl chloride		<1.9	2 U	4.1 U	320 U	2 U	0.41 U	0.41 U

Soil vapor guidance values for monitoring and mitigation presented in Matrices 1 & 2 of New York State Department of Health
Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

- LEGEND
- MW-01 ◆ MONITORING WELL LOCATION
- P-02 ▼ LEACH PIT LOCATION
- APPROXIMATE REFUSE AREA
- APPROXIMATE WETLAND AREA
- GROUNDWATER FLOW DIRECTION

- NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.
2. [BRACKETS] INDICATE CONCENTRATION EQUALS OR EXCEEDS NY-GWQS.
3. NY-GWQS - NEW YORK GROUNDWATER QUALITY STANDARD.
4. ALL CONCENTRATIONS ARE IN $\mu\text{g/L}$.
5. ft bgs - FEET BELOW GROUND SURFACE

- SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.
2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.
3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.
4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.
5. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.



MW-11	MM-GMMW11-02230
Constituent	NY-GWQS
Trichloroethene	5

MW-06	MM-GMMW06-02230
Constituent	NY-GWQS
Trichloroethene	5

MW-03	MM-GMMW03-02240
Constituent	NY-GWQS
Trichloroethene	5

MW-04	MM-GMMW04-02240
Constituent	NY-GWQS
Tetrachloroethene	5

TITLE

Groundwater Exceedences - February 2006

Supplemental RI/FS - Additional Data Collection Summary Letter Report

Magna Metals, Cortlandt, New York

DWN:	LMB	DES:	CTS	PROJECT NO.:	1172.0003
CHKD:		APPD:		FIGURE NO.:	4-5
DATE:	06/12/2006	REV.:	0		BCLP04697